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FLOWER GARDENING IN S. INDIA

A Practical Guide for Amateurs.

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With Illustrations.

MADRAS.

**THE ASSOCIATED PUBLISHERS (MADRAS), LTD.,
HIGGINBOTHAMS DEPARTMENT.**

1927.

cultivation of Coffee, Tea, Rubber and other plantation crops which have stimulated the economic development of S. India in no small degree.

But of late years various causes have operated against the maintenance of steady progress in this direction. One grievous result of this has been that it is at present extremely difficult to find skilled gardeners who have been properly trained to the profession. Those, therefore, who wish to utilise to the full their opportunities of garden-making in this country (for which facilities in other respects are plentiful) have to direct the work of the gardener personally in every detail. The writer hopes that the practical hints contained in this book in regard to the technique of plant propagation, potting, watering, drainage, the mixing of composts, the selection of plant material and the descriptive and cultural notes (alphabetically arranged) on the more important plants suitable for cultivation on the plains of S. India will enable the average amateur to direct the work of his gardener more efficiently and to gain, at the same time, a deeper insight into plant life in the tropics.

EGMORE, MADRAS,
16th July 1927.

B. S. N.

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period and its period of active growth. Roughly it may be stated that the dry mid-summer months have the same effect on plant growth as the winter in a temperate climate, and the cold months in the tropical regions are generally suitable for the cultivation of the same class of plants as are grown in the summer in the northern latitudes.

There are three other important factors to be considered with reference to the climate, namely, the nearness to the sea, the rainfall and the elevation.

Nearness to the sea implies a moist atmosphere and the absence of a marked contrast between the day and the night temperatures. This greatly alters the range of plant material suitable for a locality. For, while palms and crotons and other foliage plants do exceptionally well in the coastal regions, the comparatively warm nights and the moisture content of the air are hurtful to many a plant of the cooler and drier regions. Roses, for example, do very poorly in the neighbourhood of Madras, but a few miles away from the coast where the day temperatures are even higher, they do better. Many plants of the warm temperate regions do well even in places which are not very much higher than sea level, if they are at a considerable distance from the coast. Geraniums, for ex-

ample, can be grown in the region of Madras only in the cold season, but it is seldom possible to make the plants survive the hot weather. But this difficulty is hardly present at the same latitude in places away from the coast.

The adverse conditions presented by the hot, humid atmosphere of the coastal region are mitigated in a considerable measure in places which are served by the abundant rains of the south-west monsoon. Thus we find that where the mean temperature is appreciably lowered by continuous rain as on the West coast, climatic difficulties are less formidable, and nearly all those favourites of a temperate climate which succumb to the heat of the summer in the neighbourhood of Madras thrive excellently in the districts which get the June to September rains.

Ascending altitudes, as is well known, are synonymous with approximations to the European climate. An elevation of even a thousand feet from sea-level makes a very appreciable difference in the nature of the climate and consequently also in the range of plant material suitable for the place.

In Coimbatore which has an elevation of 1,350 feet, Ivy Geraniums can be easily trained on trellises to a height of 10 to 12 feet, and Hydrangeas have

often happens with rice fields or marsh land converted into building sites under present day conditions of suburban extensions, an excellent plan is to raise the ground level with the debris obtained from dismantled buildings incorporated with a small quantity of soil obtained at the annual cleanings of rain water channels, or with vegetable refuse which has been rendered thoroughly innocuous by means of the modern type of incinerators. Coal ashes may also be used to a limited extent, but not as an exclusive filler. Where the ground level requires to be only slightly raised for securing effective drainage and improving the general contour, it is often a good plan to remove the top soil of the path-ways to a depth of about 2 feet and utilise the earth for this purpose, the path-ways being rendered more firm and free from weed growth by receiving coal ashes or debris for a base. Sandy soils can be improved even more easily than clayey land by the simple means of growing green manure crops for several seasons successively. The cultivation of groundnut is invaluable for this purpose and nearly all kinds of leguminous crops may be used. When the top growth is nearly complete, the entire crop should be plowed under so as to increase the humus in which sandy soils are naturally very deficient. When the sand is so entirely devoid of humus that it will

not sustain even a green manure crop, a thin surface layer of 6 to 8 inches of good garden loam or tank silt furnishes a sufficient base. Rich loamy soils which are sometimes rendered too coarse by the presence of large pieces of stone can likewise be improved to a remarkable degree by growing groundnut. In these cases, the cost of the produce usually balances the cost of the cultivation, and the entire area is brought into fine tilth without any net expenditure whatsoever.

Soil defects are rendered comparatively immaterial for purposes of gardening by the fact that every individual plant or group of plants is assigned a definite place where the soil is made up of special composts.

One important point that should be remembered in connection with the maintenance of the general fertility of the soil in a garden is that all that is taken from the soil should as far as possible be restored to it. Not a leaf or twig should be thrown out of the compound; and all the sweepings of leaves, twigs, prunings etc., should be put into a pit and restored to the soil in the form of leaf mould.

MANURES.

Horse-manure is by far the most important manure for nearly all classes of garden plants and is almost

indispensable for pot plants: It contains nearly all the ingredients of plant food in requisite quantities. But it is dangerous to apply it fresh, especially in the case of pot plants, as the heat caused by fermentation is often sufficient to burn up the roots. When it is allowed to get dry, or left too long in a heap, it loses a large part of its manurial value. For best results, it should be obtained fresh and laid in a heap in a shady place, covered with a thin layer (one or two inches) of red earth or sand which serves the double purpose of preventing excessive evaporation and keeping off flies. It should receive a pitcher or two of water spread over it to keep the contents moderately moist but not wet. It should be turned over two or three times, once in about 4 days. In two to three weeks, manure so treated will be found to be in an ideal condition especially for pot plants.

Horse-manure that has remained unused for a long period is rather slow to act, but is nevertheless valuable, especially for plants in the ground. For pot plants, it should be regarded as next in merit to moderately fermented manure. When possible it should be enriched with the drainings of the stable or cattle-shed.

Cow-manure. Although cow-manure is quite rich in plant food, its chief drawback is that it cannot be applied unless it has been allowed to decay for about a year or longer. Cowdung in its fresh condition is apt to harbour grubs which are very destructive to plant life. For plants which are permanently planted out and for light sandy soils, thoroughly decayed cow-manure forms one of the most durable plant foods. It is also valuable as an immediate plant food in liquid form.

Sheep-manure well crushed and stored in cement barrels or other similar receptacles and kept moderately moist is extremely valuable especially for light soils and pot composts. It is very durable in its effect and when it is available it should be preferred to cow-manure.

The dung of the domestic fowl is a very powerful manure and is best applied in moderate quantities and in liquid form.

Fish guano in localities where it can be had cheap, as on the west coast where there are now several factories for extracting fish oil, is valuable as a complete plant food, rich in nitrogen as well as phosphates.

Bones are invaluable especially in the cultivation of flowering perennials such as Roses. Applied in their natural state, they take several months to be available

as plant food. Where quick results are desired, they should be used in a more readily assimilable form, as offered by the manufacturers of chemical manures either as bone meal or as superphosphates.

Leaf-mould. All vegetable refuse (such as the dry leaves collected from underneath the shade trees, the twigs and leaves obtained by pruning the shrubbery from time to time, the stems of cannas, the tops of Dahlias, Chrysanthemums, etc., which are removed after they have finished flowering), should be collected and thrown into a pit; and each time when fresh material is added, it should be covered with a thin layer of ordinary earth; and occasionally, of lime (against vermin). The contents of the pit become thoroughly decayed and ready for use in about a year. If arrangements can be made to drain into the pit the waste water from the bath or kitchen, the contents become ready for use in about 4 months. If two such pits be made, to be filled alternately, the older material which is thoroughly decayed can be more conveniently removed for use. Leaf-mould is almost indispensable for pot plants, and forms the main ingredient of composts for Ferns, Palms, Achimenes and a great many other plants. But one important precaution is necessary in connection with its use. It is often infested by the larvæ of insects which later feed on the roots or leaves

of plants. To ward off this danger, it is a good plan to lay the leaf-mould in the form of a conical heap, with a little charcoal at the bottom, cover the heap with a thin layer of earth, and set fire to the charcoal, so that the contents of the whole heap may slowly smoulder for a day or two and become charred and thoroughly sterilised. Leaf-mould treated in this manner is an ideal plant food.

Chemical Manures or Fertilizers. These consist chiefly of *nitrates* the property of which is mainly to stimulate vegetative growth, *phosphates* which render plants more floriferous, and *potash* which is ordinarily less in request, but useful in some cases as a means of imparting firmness to weak-stemmed plants such as Carnations, and imparting to some extent a deeper colour to the flowers. The practical gardener, however, will find that when organic manures are available in sufficient quantity, chemical manures are best applied in liquid form, and where there is dearth of organic manures, these fertilizers are almost indispensable. But the amateur must remember in the case of chemical manures, particularly nitrates, that it will not do to err on the side of excess, for, even slight over-dosing means disaster. In S.*India there are manufacturers of chemical fertilizers of repute at the present day who prepare special fertilizers for the

use of flower gardens. A mixture of 1 part concentrated superphosphate, $1\frac{1}{2}$ parts sulphate of potash and 1 part nitrate of soda as recommended by one of the leading manufacturers for use as liquid manure will be found to give very good results.

Liquid-manure. Liquid-manure can also be prepared from any of the organic manures mentioned above, such as horse-manure, cow-manure, or the excreta of birds. A large earthen vessel sunk in the ground, or a beer barrel placed in a corner of the potting shed, makes a convenient receptacle for liquid manure ready for use at all times of the year. The receptacle should be kept always full of water, and fresh horse-manure or cow-manure, about a sixth of the capacity of the pot or barrel (and only half of that quantity when fowl dung is used) should be wrapped in a sack and thrown into it. The wrapping is to prevent the insoluble portion of the manure from passing into the water. The liquid is ready for use in about 24 hours but may be kept indefinitely. Care should be taken to dilute the concentrated liquid in the barrel with water about five times the quantity. The solution should be *weak, thin* and *clear*. Plants in an active state of growth are immensely benefited by weekly applications of this liquid. When the concentrated solution in the barrel is nearly used up, it should be

renewed from time to time with the same quantity of fresh manure. Liquid manure prepared in this manner, being rich in nitrogen, is best applied to stimulate vegetative growth, and it should preferably be supplemented by fertilizers in liquid form when a plant is about to flower. The fertilizer ordered for this purpose should be rich in superphosphate.

Composts. Composts are made up soils to suit particular classes of plants. They generally consist of rich garden loam, horse-manure or well-rotted cow-manure, leaf-mould and sand, in different proportions to vary the texture and manurial value according to the needs of each class of plant. Unfortunately, rich garden loam of the type which forms the staple material of composts in the West is seldom procurable in this part of the country. For pot plants therefore it is usual to substitute for this loam what is known as red earth; which is a fairly retentive soil, and though not rich in humus, gives the right texture to pot composts when mixed with manure, leaf-mould and sand.

The usual proportion in which the ingredients are mixed is:—

Horse-manure (moderately fermented)	2 parts.
Leaf-mould (well decayed)	“ 1 part.
Red earth	“ 1 „
River sand	“ 1 „

In the case of certain classes of plants, such as *Caladiums*, *Achimenes*, *Begonias*, etc., the quantities of horse-manure and leaf-mould in the proportion given above may be interchanged. Where lighter soils are required, as in the case of *Stephanotis* (Creeping Tuberose), *Strelitzia reginae* (Bird of Paradise), the various kinds of *Cactus*, the ground *Orchids*, the *Rex Begonias*, the *Gesneriads*, and plants of an epiphytic nature, such as *Billbergias*, there should be added, to the compost mixed as above, half as much of crushed debris, consisting of pieces of brick and old mortar from dismantled masonry. Crushed charcoal may also be added with advantage where light open soils are required.

LAYING OUT AND PLANTING.

The central idea in laying out a garden is to secure as much naturalness as possible. Plants cut out and trimmed to resemble birds, animals or other figures of the topiary art, as also flower beds of elaborate design and of rigid geometrical details are now seldom in vogue, and formal gardening of classical style is being largely replaced in recent years by the work of the landscape designer. The predominant feature of true landscape is spontaneity.

Until recently it was generally supposed that landscape gardening was only possible and appropriate with

fairly extensive areas which permit of an open centre, with plantings for mass effect on the sides, and vistas to the offscape. But of late years it has been shown that even small gardens may secure landscape effects, since it is often possible to take advantage of the good views and scenes beyond the garden. With the aid of appropriate vistas, one may bring into the picture of the home landscape with excellent effect even familiar objects, such as a distant tower, or a notable residence, or a noble tree, a bridge, or a stream, or a wood or forest of any kind. When one is not so fortunate as to be able to introduce any of these offscapes into his garden, formal gardening is more appropriate; but even as regards the latter, very pleasing effects can be obtained by aiming at naturalness as far as possible and avoiding the rigid lines of shape and symmetry.

It is obvious that no arbitrary rules can exist in regard to designing a garden, but a knowledge of the following general principles may be useful in producing the desired effect:

At least one open space is an essential feature. A lawn with framing plantations is almost indispensable. The sides or boundaries should be filled with plantings for mass effect. Bright and refreshing foliage and a soft and velvety stretch of lawn should be the

dominant features, and individual plants and flower beds regarded as only incidental embellishments. Walks and drives are no part of the picture. Their place is where they are wanted. Desirable views of the outlying landscape should be secured wherever possible. The undesirable views should be screened off in a natural way by means of hedges or screen plantings of trees or trellises on which climbers are trained. Every window of the house including the rear portion should present a good prospect. In very small gardens, the border for mass effect should be planted against the back ground of the fence and the rest of the space reserved for lawn so as to secure an open centre. When the limited front space is too close to a dusty thoroughfare, a thick screen planting of moderate sized trees of uniform growth is advisable. Planting is also desirable as a setting against the blankness of the walls and to soften the lines of the base and corners of the building and to tie the same to the lawn surface.

In the case of gardens with only a narrow strip of space in front, a large and spreading tree for shade, seating space and a promenade are of prime importance. In gardens of moderate size, care should be taken not to plant too many trees, as the majority of tropical trees attain a huge size in course of time and shut out all the good views from the living rooms.

In choosing plant material, a few varieties in large quantities are as a rule far more effective than a large number of varieties in small quantities. *Bauhinia* (Camel's foot), *Callistemon* (Bottle brush), *Murraya exotica* (China Box), *Plumeria* (Pagoda tree), *Lagerstroemia* (Crepe myrtle), *Caesalpinia* and *Gardenia* are among the most suitable plants for high screens and borders in small gardens. For borders of medium height, *Tabernaemontana*, *Hibiscus* of numerous varieties, *Olcander*, *Poinsettia*, *Tecoma capensis*, *Ixora coccinea*, *Franciscea* and *Justicia* are useful. To screen off a narrow strip next to a neighbour's blank wall or backyard, bamboo lattice work covered with *Antigonon*, *Quisqualis* (the Rangoon creeper), *Bignonia venusta*, *B. gracilis*, *Thunbergia grandiflora* and *Passiflora* (the passion flower) are serviceable. If there is room for broad-spreading vines, *Bougainvillea*, or *Petrea* (the purple wreath) may be used. For dark green borders for the lawn, the *China Box*, *Casuarina* and the green-leaved varieties of *Panax* are useful. For a bright variegation of colour, *Arundo Donax variegatum*, *Aralias* of different species and varieties, *Graptophyllum*, and *Acalypha tricolor* make excellent border plants.

Portions of the garden which are subject to water logging during the rainy season may be planted with *Polygonum*, *Hedychium*, *Cyperus* and *Pontederia*.

distinctive and of unusual interest should be planted close to the house. Climbers, such as Bougainvillea and Bignonia can be trained against the walls with great effect, but it must be remembered that after a few years the lower portion of the woody vines becomes bare and leafless, and to relieve this, scandent shrubs of a less rampant character, such as *Jasminum pubescens* and *Tecoma capensis* should be planted as fillers, and these again should be set off by group plantings of dwarf flowering shrubs. The border planting should not present a uniform front. There should be projecting points and receding bays in the shrub mass which heighten the effect of the lawn and suggest naturalness. Pergolas, and rustic arbors are appropriate as links between the main building and the secluded lawn or play ground.

The roads must be neatly laid out with good binding gravel, or concrete, or coal ashes for a base, and must be slightly convex at the centre so that the rain water may rapidly drain off along the edges.

Where pipe water is available, it is best to lay out a line of pipes with taps at every 30 feet, so that all the watering may be done more quickly and economically with a rubber hose. The hose will make it possible to wash the leaves frequently to remove dust and dislodge insects. It can be fitted up with a nozzle

which has a socket for holding a ball of fish-oil soap, so that the water before issuing at the open end will be converted into a thin solution of soap which will help to ward off most of the plant enemies.

LAWNS.

The maintenance of the lawn in a soft, green and velvety condition throughout the year is by far the most important problem in connection with good gardening; for with the lawns in a neglected or half-neglected condition, as so often happens, even the most carefully tended flower beds and borders fail to secure the desired effect, and on the other hand, with the lawns in proper condition, the flower beds are of comparatively little consequence in determining the beauty of the landscape. No garden, however small, should be without an appropriate extent of space reserved for the lawn. Where the grounds are extensive, it is desirable to determine beforehand the area that is desired to be definitely brought under cultivation and leave the rest of the grounds to remain under natural conditions, as lawns in this country entail constant care and considerable expense.

Where lasting results of a high standard are desired the following points should be noted:

The ground should first be graded but not necessarily levelled, the object being merely to secure effective drainage and fill up pits and hollows which might cause water to stagnate or keep the place so wet as to prevent the growth of grass.

The ground should then be dug to a depth of at least 2 feet, so as to aerate the sub-soil and expose it to the action of the sun. This should as a rule be done when a few showers fall, and long in advance of the rainy season, so that the soil may be moist enough for trenching but not wet.

The soil thus turned should receive any cheap organic manure that may be available, such as cow manure, silt from the drains, leaf-mould where it is readily available in large quantities, poultry yard sweepings, etc. The total quantity of such manure should be sufficient to form a layer of about 6 inches on the area trenched and the manure should be thoroughly worked into the soil. In the case of clayey soils, the manure should be supplemented where possible with debris to the extent of another 6 inches of the area trenched. This should likewise be worked into the upturned soil. With the advent of the regular monsoon, the ground should be carefully levelled and the large clods broken up. It should now re-

ceive a second dressing of manure at the rate of about a cart-load for every 300 sq. ft. again worked into the soil.

The ground should now be thoroughly re-levelled with a harrow or with a heavy log of wood drawn by bullocks.

The ground thus prepared should next be planted with grass. What is known as *Hariyali* (or *Doob*) grass (*Cynodon dactylon*) is the best for this climate. It is soft, extremely vigorous, and easily available as a native grass in any quantity. It grows under almost any conditions and resists the heat of the summer admirably.

The planting of the grass is usually done by taking short pieces and dibbling them into the soil. This method is laborious and expensive. Better and quicker results are obtained by the following method: Chop the grass into lengths of 3 to 4 inches and mix it with a semi-solid substance obtained by putting together equal quantities of good garden loam and cow-manure diluted with water until it becomes a thick paste. Spread this paste evenly on the levelled area, press it down firmly, and cover the ground with palm leaves or straw to protect the newly cut grass until it begins to root. When the grass shows signs of

growth, remove the shelter and water occasionally according to the condition of the weather.

Where turf can be had from the banks of water courses or dry tank beds on which the *Hariyali* grass grows wild almost everywhere in S. India, lawns can be established in a surprisingly short time by cutting the sod carefully with a spade in rectangular pieces of about 12 ins. by 15 ins. and laying them on the area to be planted to grass after it has been cultivated as described above. When the turf is not sufficient for the whole area to be covered, it can be laid in squares like a chess board with equal spaces alternately left bare. The grass will soon spread over the blank spaces. Any patches that remain uncovered may be filled with the chopped grass as stated above, or by dibbling pieces of rooted grass into the soil.

Thereafter, weeding, mowing and rolling are the three operations which need to be continually attended to. Occasional dressings of manure or the application of nitrate of soda in the form of liquid manure at the rate of one ounce for every 2 gallons of water are of course also necessary.

Watering with a rubber hose and sprinkler is far more satisfactory than the usual method of flushing or watering overhead in the form of splashes with pitchers.

GARDEN TOOLS.

The most important tools are a shovel, hoe, rake, trowel, fork, syringe, watering can, pruning knife, shears, budding knife, and a pair of non-rusting secateurs. Of all these tools, of which standard types can be had from dealers in planter's tools, it is important that the watering-can must conform to certain definite requirements. Fig. 1 is the most convenient type. Its long spout and two detachable

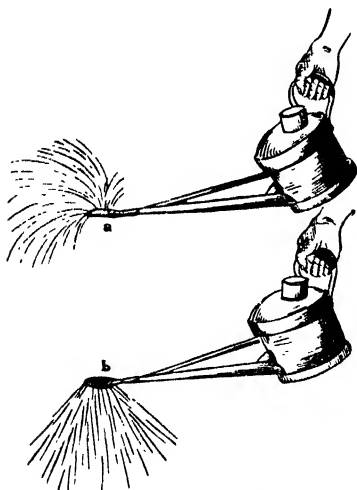


Fig. 1. Watering Can.

its face downwards (as at 'b') ; when watering very tiny

"roses" are its special features. The shape of the "rose" permits of adjusting the spray to increase or decrease its force as may be desired. When it is necessary to wash the leaves while watering, or to limit the spread of the spray to a small radius, as when watering at the roots without wetting the foliage or flowers, the rose is fixed with

and delicate seedlings as gently as possible, the rose is adjusted with its face upwards (as at 'a') so that the water merely drizzles. Further adjustment of the force of the spray is obtained by having one of the roses with much smaller holes than the other. Large plants may conveniently be watered more quickly without the *rose*.

The secateurs are very useful in pruning light wood, as of roses, or edgings, or in shaping plants to ensure symmetrical growth, or in nipping top buds so as to induce lateral growth. (Fig. 2).

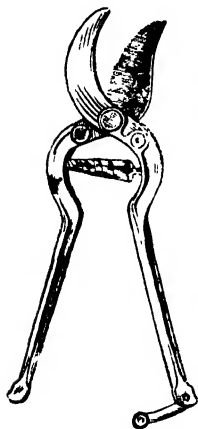


Fig. 2. Secateurs.

A strongly made brass syringe is invaluable for the purpose of removing the heavy deposits of dust on the foliage of plants especially in the dry months, and is almost indispensable where orchids are grown on the trunks of large trees. It is also serviceable for the purpose of spraying insecticides.

A hand lens is very serviceable in examining the progress of delicate seed in the several stages of germination, in tracing snags to their source, so that the entire decayed portion of

a limb may be removed with accuracy, and in detecting in its very first stages the pest known as 'Scale' insect.

The uses of the other tools are too well known to need description.

GARDEN STRUCTURES.

Plant houses of the type so familiar in the West are practically non-existent in this country, and in a little handbook of this kind written primarily for amateurs, it would perhaps be out of place to dwell on the possibilities of plant culture (which are doubtless very great) under the artificial conditions afforded by green houses, etc., which have helped to secure such astounding results in the European countries.

Plant houses in this part of the country are usually intended to protect the more delicate plants in the summer from the hot winds and a blazing sun. Their size must be determined according to individual requirements and in proportion to the size of the entire garden. When possible, they should be placed in a north to south direction. Simple lattice work made of bamboo, both for roof and the sides, answers admirably. But the material is not durable. Where more permanent structures are desired, a lath house may be constructed, with the slats about one and a half inches

The walks inside the house should be covered with coal ashes, or binding gravel, pebbles, or other material which does not render them slippery, despite their being kept constantly wet.

Structures of this kind present almost ideal conditions for all kinds of ferns in the summer; and *Begonias*, *Orchids*, *Anthuriums*, etc., find a suitable atmosphere in them at all times of the year. While the larger palms will find sufficient shelter in the open under the shade of trees, the more delicate specimens, particularly those intended for decoration indoors, should always receive the closer attention that is given to the contents of a plant house.

Gloxinias, *Rex Begonias*, and most plants of the warm temperate regions, which are ordinarily unable to survive the heat of the summer, can with safety be placed on little rockeries built of laterite stone inside these houses, the interspaces between the lumps of laterite being filled with a compost consisting of about four parts of leaf mould and one of light loam. It is amazing how these plants, which must otherwise come to grief under the trying conditions of the weather, grow almost luxuriantly under the protection provided as above. In these days when reinforced concrete is so plentifully used for all kinds of constructional

work, it should be easily possible for the more enterprising amateur to construct benches on either side of his plant house which can hold a sheet of water about 5 inches in depth. These benches provide an additional means of increasing the moisture inside the house, and of rendering the place more suitable for many of the tropical orchids, such as *Dendrobiums* and *Vandas*. The space covered by the sheet of water may also be utilized for the purpose of placing pots of orchids, rested on pots kept inverted, so as to remain just above the level of the water. Orchids and other epiphytic plants, which are grown on stumps of wood, may be hung up above the benches by means of wire.

Where crotons and other foliage plants are grown extensively, it is often difficult to find accommodation for them in the plant houses in the summer. Although such plants can receive sufficient protection from the sun under large shade trees, it is a better plan to house them in enclosed areas secured by means of lath frames covered with cheese cloth. These frames provide more diffused light than is ordinarily possible under the trees and the humidity can be increased by syringing the top as well as the foliage.

GLASS FRAMES FOR HOT BEDS.

Where plants are required in large numbers and of nearly uniform size and growth, for mass effect, or for hedges or edgings, and it is desired to multiply them rapidly, nothing is so serviceable as the bottom heat provided by fermenting manure, or what is called a *Hot Bed*. To conserve this bottom heat, it is usual to cover the beds in which the cuttings are inserted, with glass sashes or frames, so as to secure a warm and humid atmosphere around the cuttings, and let in at the same time sufficient light for their growth.

In the case of many plants which are difficult to propagate, a glass frame and hot bed are almost in-

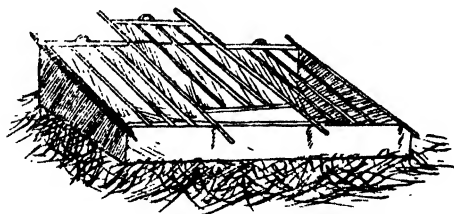


Fig. 3.

dispensable. It is therefore desirable (in the case of large gardens) to set apart a place for one or more

glass frames in a remote corner of the garden and under the shade of a tree. These frames may be constructed of any light cheap wood covered with tar as a protection against white ants. 6' x 2½' is a convenient size for a unit. The depth should be about 2 feet at the back and 18 inches in the front,

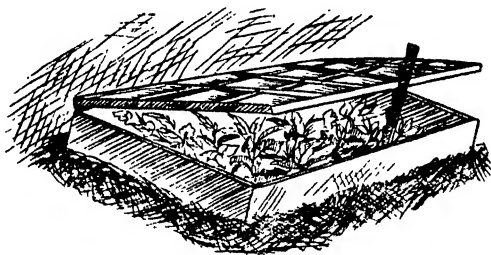


Fig. 4. Glass Frames for Hot Beds.

so as to have sloping top. For cheapness of construction, dealwood boxes sawed into two may be provided for the purpose. No bottom is needed, as the frame is to serve as an enclosure to the manure heap. The top should be glazed with pane glass, either as a sliding sash (Fig. 3), or secured on hinges at the back edge (Fig. 4). The sides may be covered with

boarding. When the top can be raised on hinges a detachable stay should be provided as in Fig. 4, so that the top may remain raised, when necessary, at any angle desired. These frames should be placed facing the north. Direct rays of the sun should be intercepted by means of a screen or awning.

GARDEN APPLIANCES.

In addition to standard pots of various sizes (Fig. 12), it is necessary to have a supply of ornamental containers for specimen plants: Orchid pots, hanging baskets, etc. (Fig. 5).

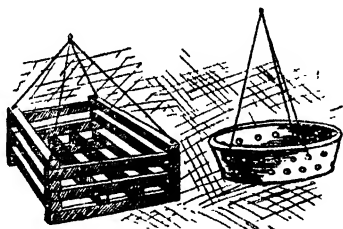


Fig. 5. Hanging Baskets for Orchids etc.

A potting bench is also necessary where the garden maker would either try his own hand at potting, etc., or

would train his gardener to modern methods of labour. A

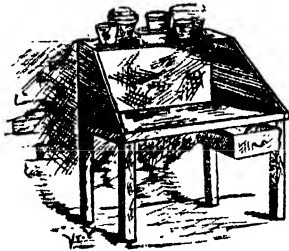


Fig. 6. Potting Bench.

bench or table of the type shown here is very convenient for mixing composts, effectually and in moderate quantities, and also for potting plants without the fatigue which the gardener unnecessarily inflicts upon himself by sitting on the ground in the characteristic fashion to which he is accustomed in this country.

As seedlings are usually potted up in 3" pots, it is advisable to have a few "flats", or little wooden trays (Fig. 7) for conveying these and also the larger plants to the potting bench, or to the nursery rows, several at a time. These

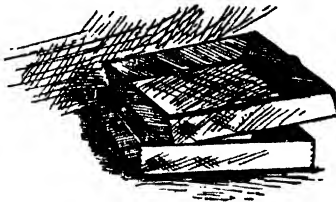


Fig. 7. Garden 'Flats.'

flats, which are usually made of dealwood, are useful also for sowing seeds. 16" x 20" and 3" deep is a convenient size.

In addition to the bamboo or *rattan*-stakes, it is always necessary in a flower garden to have a number

of wire stays for plants of smaller growth. These (of the type shown in Fig. 8) are easily made by the gardener in his spare time in the summer. If made of non-rusting wire, they last for several years. They can also be imported readymade.

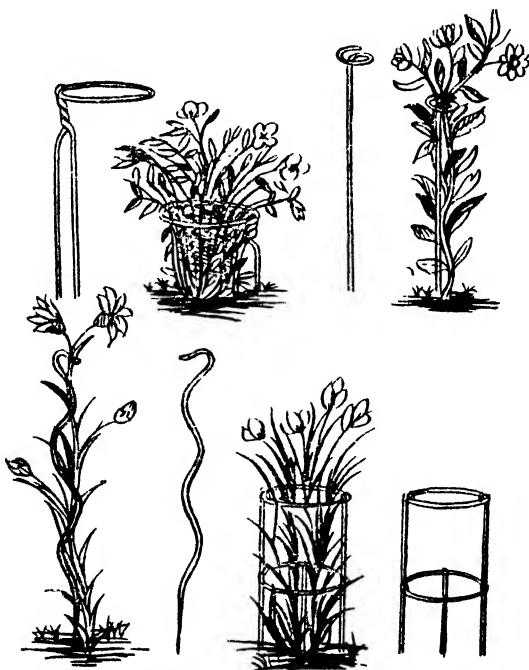


Fig. 8. Wire Stays for Dwarf Succulents.

Simple and neatly constructed supports for the climbers, of the type so commonly seen in the suburban gardens of the west, are rather a rare sight in this part of the country, but there is no reason why they should not be used more extensively. They are not expensive and are an ornament to the garden even when the climbers are not in bloom. Figs. 9 and 10 illustrate two simple types. The woodwork should be painted white, and the central stay should be of iron so that the wooden frame may not touch the ground where there is the danger of attacks by white ants.

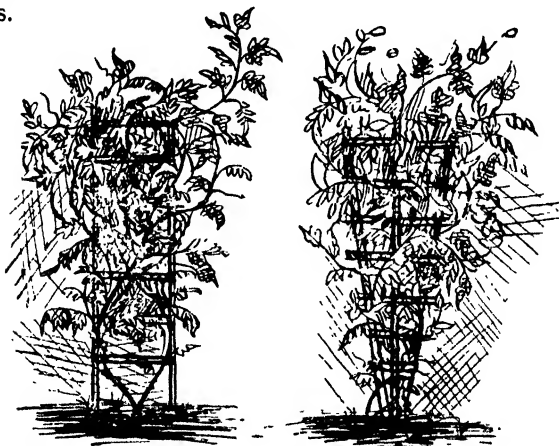


Fig. 9. **Fig. 10.**
Neat supports for Climbers.

Made-up Baskets.

At Christmas or other festive occasions, ornamental plants of diminutive size, and specially restricted to 3" to 4" pots, can be arranged with excellent effect in little baskets or pans. The material suitable for this purpose consists of small-leaved *Caladiums*, little *Dracanas*, small *Ferns*, 10 to 12-inch high *Poinsettias*, the perennial *Torenia*, *Geraniums*, *Saintpaulia*, *Gesnera*, *Cyrtodeira*, *Fittonia*, *Peperomia*, and *Phalaris* and other dwarf ornamental grasses. The artistic effect to be produced calls for the same skill as in arranging cut flowers in a vase in making the colours blend and deciding the shape and the general contour. In transplanting from the pots to the basket or pan, plants, such as *Poinsettias*, which wilt or shed their leaves on disturbing their roots, should be embedded *with* the pots.

Standards.

Some plants lend themselves to training to any shape, and are far more effective when they are trained to one straight and erect stem, up to a height of 2—3 feet, with the foliage and flowers radiating from the laterals at the top. Roses, budded on *Edward* stock at a height of 2 feet from the base,

make very effective standards. Plants of *Hibiscus*, *Murraya exotica*, *Franciscea*, *Casuarina* and *Lantana* are among the choicest tropical plants that are very showy as standards.

The plant intended for a standard should have all its laterals cut back to within $\frac{1}{4}$ inch from the main stem, which should be trained as a single vertical leader. All side shoots that may develop later should be promptly rubbed off, up to the height at which the top is desired. A stake should be given of the desired height at the very beginning. The leader should be allowed to grow on, about a foot higher than the height ultimately intended for the standard. The top should then be headed to the height at which it is expected to remain. All laterals intended for the top should then be allowed to grow on undisturbed, until they attain their full length. The laterals should then be cut back from one-third to two-thirds of their length, in order to induce further branching. When the top is of fairly dense growth, further pruning should be done with an eye to the desired shape. Standards which are grown as pot plants should be shifted into larger pots only when the pots in which they are already growing are too full of root growth. As a rule, they should be re-potted with fresh soil in the same pots.

House Plants.

House plants are grown with special care as to shape and finish to make them suitable for display as single specimen plants on the window-sill, or as vase-plants on the verandah, or in the drawingroom brackets. *Ferns*, *Caladiums*, *Dracenas*, *Marantas*, *Palms*, *Ficus elastica* (the India Rubber Plant), *Rex Begonias*, *Araucaria*, *Poinsettia* in bloom and *Pandanus* are important among the plants that lend themselves for such display. House plants should represent nature's own arrangement of a vase, and should present no artificiality, such as stakes or wire supports, to correct their natural shape. If stakes or supports are used, they should be as little noticeable as possible. The whole plant should be perfectly free from blemishes, such as mal-formed leaves, an unnatural growth (as would happen when plants remain too near a wall, or are crowded by other plants, or receive light only from one side), sun scalds, or the disfigurement caused by insects, etc. Where the plant is remarkable for its natural symmetry of form, as in the case of *Araucarias*, *Dracenas*, etc., the symmetry should be perfect. Such results are possible only when plants intended for that purpose receive special care from the very start, and it is always a

good plan to single out a few plants for this purpose every season.

Forcing.

Forcing is the art of so conserving a plant's energy as to be able to bring it into display in the shape of fruit or flowers on a desired occasion. This of course is possible only within certain narrow limits, which are more or less determined by the nature of the plants concerned. For example, with our present knowledge of plants, it would be a useless task to force Chrysanthemums into bloom in May and June, but other plants, such as Jasmines, can be made to flower almost at any time of the year. As a rule, plants can be so retarded or accelerated in their natural growth as to be at their best early or late in a given season to suit a particular occasion, such as Easter or Christmas, or a Show, or an Exhibition. The fundamental principle in forcing perennials is that the plant to be forced should first be grown on to make a substantial root growth. Then the plant should be rested, and its growth arrested by some means or other. In a tropical climate like that of S. India, this rest and arrest of growth is done by root-pruning (in the case of plants in the ground), or more frequently, by withholding water and reducing it to the minimum necessary to prevent the plant from dying.

This has the same effect as the winter rest of deciduous plants in a temperate climate. The next process is to water the plant copiously. This usually causes the dormant wood to break into flower-bearing shoots, and the result is a profusion of bloom in one mass, so as to produce a more striking effect than when the plant is grown under natural conditions. Poinsettias and Bougainvilleas are particularly suitable for forcing for Christmas. Jasmines (as already stated), Tuberoses, and many perennial shrubs, such as Clerodendrons, Ixoras, etc., can be forced into bloom at almost any time of the year.

Pruning.

Pruning is the art of removing a certain portion of the wood so as to throw the full energy of the roots into the wood that is retained. Of course, the first care in pruning is the removal of dead, diseased, or mal-formed wood. A second object is to secure a natural balance of the top, and symmetry of form, where desired, but the main purpose in pruning flowering shrubs is to restrict their size and to obtain the maximum of flowers with the minimum of foliage at a given time. In the case of annuals, pruning presents no difficulty, as the initial nipping of top-buds so as

to produce a bushy growth is usually sufficient to secure a profusion of bloom.

Success in pruning depends upon a correct understanding of the flowering habit of plants. This is acquired by a careful observation of plants in the different stages of their growth through a complete cycle of seasons. The first point to note is—which is the bearing wood of the plant? *i.e.*, on which portion of the plant are the flowers borne? Is it on the matured terminal growth of the past season, or on the young shoots of the current season? The China Box (*Murraya exotica*), for example, bears flowers on the tips of the shoots that have matured their growth in the previous season. The plant bursts into bloom with the advent of the first showers of the monsoon and again early in the summer when the young growth made during the rains has hardened. To prune such a plant therefore just before its natural period of bloom is to produce foliage instead of flowers, for by removing the terminals all the bearing wood is lost. In the case of plants of this habit, the pruning for shape, or for restricting the plant to a desired size, should be done immediately after the plant has finished flowering. Some plants such as *Franciscea*, *Honey-suckle*, etc., bear flowers on the young shoots or *spurs* produced on the wood of the previous season. Prun-

ing in such cases should be done with an eye to producing as many short side-shoots as possible. Another important point for consideration is whether the pruning should be moderately done or severely. In cases in which flowers are borne on the terminal growth of young shoots, as in the case of roses, and the size of the flowers is generally proportionate to the vigour of the limb on which they are borne, the pruning should be somewhat severe, so as to prevent a multitude of weak side-shoots. In these cases, the leading branches of the previous season are cut back to two or three buds. In other cases, such as *Jasmine*, *Bougainvillea*, *Lagerstroemia*, *Tecoma capensis*, *Petrea*, etc., severe pruning of the leaders stimulates strong vegetative growth to the detriment of flower production and therefore the leaders of the past season should be only moderately cut back, so as to have as many short laterals as possible.

As a rule, a severe pruning of non-deciduous tropical plants results in a permanent check to its vegetative vigour.

The proper season for pruning is when the plants are about to start into fresh seasonal growth. Excepting the removal of snags, pruning should not be done when a plant is suffering under adverse weather conditions, as in midsummer where there is no south-west

monsoon nor adequate irrigation facilities. Border plants or the shrubbery should therefore be pruned shortly before the outbreak of the monsoon, and again for shaping or reducing the size, if necessary, before the close of the rains.

In cutting back a branch or limb, the cut should be made at a point immediately above a node or

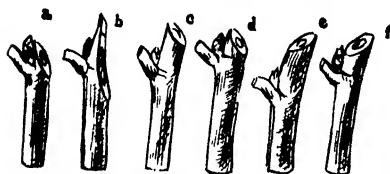


Fig. 11. Cuts—Good and Bad. 'd' alone is correct.

joint. Cutting the branches carelessly between two nodes or joints, *i.e.*, leaving a short stub beyond a node, causes snagging. Snags, in an adverse climate, continue down the entire stem, thus causing the death of the plant. Another danger of leaving stubs in pruning is that they harbour insects of the borer class, which burrow into the wood and sometimes travel to the main stem, killing the entire plant. It is also important that the wounds caused by pruning should heal up quickly, as otherwise the exposed tissues are attacked by bacteria which cause decay. Quick healing is ensured by using always a clean and sharp knife. Injury to the exposed tissues is prevented by covering the wounds with good white lead paint, or grafting.

wax. This is very essential when large limbs are removed.

The cut should begin *immediately behind and level with the bud* (or joint), go *across the stem at an angle of 45 degrees, towards the bud*, and *end immediately above the tip of the bud*, as at 'd' in Fig. 11. 'a' is defective as it is too close to the bud; 'b' is too long a cut and begins below the node, 'c' leaves a stub, ('d' is correct) 'e' and 'f' leave a stub and the angle of the cut is in the opposite direction i.e., away from the bud.

POTS.

The quality of the pots which are in common use in this part of the country (as everywhere else in India) is very poor, except in a few isolated instances, where they are obtained from a tiliary or from a factory producing *terra-cotta* work. The common country pots are as a rule very crudely made, their shape is ungainly, and their sizes are determined more or less at random; and from the mixing of the clay to the firing, the entire process of manufacture is extremely primitive. The result is that the pots, although comparatively cheap, get very easily broken and their general appearance detracts from the beauty of the plants grown in them.

Opportunity is therefore taken to enlist the reader's co-operation in the direction of standardizing the size

and quality of our flower pots on the same lines as in the west. The qualities of a standard pot are:—

It must be well fired, and produce a metallic ring similar to that produced by sound porcelain. It should be evenly thick, except at the rim, where it should have a double thickness. The rim should be of the shape of a hoop iron band, and not a protruding edge, which chips off all too readily. The sides should be *straight*, and not oblique, or curved, or bulging in the middle. For correct shape and standard sizes, the *height* of the pot, as measured on the *side*, should be *equal* to its *diameter* at the mouth. The sizes should range definitely from 3 ins. to 15 ins.

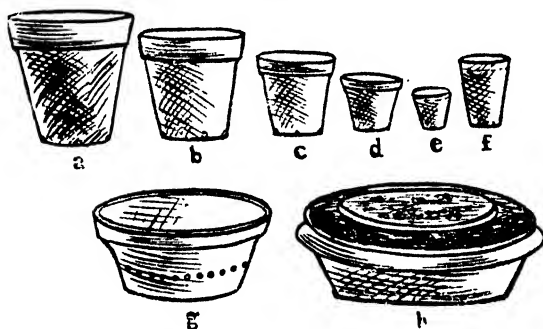


Fig. 12. Standard Pots.

Pots of special size and shape are those in which the depth is increased, or decreased, according to the

requirements of particular classes of plants. For growing seedlings of trees with a tap root, the depth of the pot is increased by about a third of its normal height (Fig. 12, 'f'). For Ferns and plants of dwarf succulent growth which are shallow-rooted, pots with their depth reduced to two-thirds the diameter at the top are suitable. These shallow pots, or 'pans' as they are called, are also suitable for sowing seeds. (Fig. 12, 'g').

Potting.

The first essential of good potting is that the drainage must be thorough. The smaller pots should have at least one hole at the bottom in the centre, and the larger pots (above 6") should have three holes at the bottom. These holes should first be covered with *crock* (a piece of potsherd) with its

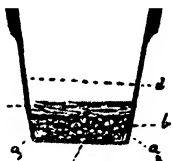


Fig. 13. Section of a Pot.

convex side facing inwards (Fig. 13, *a*, *a*¹, *a*²,). In the case of pots below 6" size, no further drainage material is usually necessary. Large pots should be filled with potsherd (from pieces of broken pots or brick) to the depth of one to two inches according to the size of pot (Fig. 13, 'b'). The potsherd should be

covered with river-sand to fill the interstices (Fig. 13, 'c').

The pots should then be filled with compost within one inch of the rim, leaving enough room for the ball

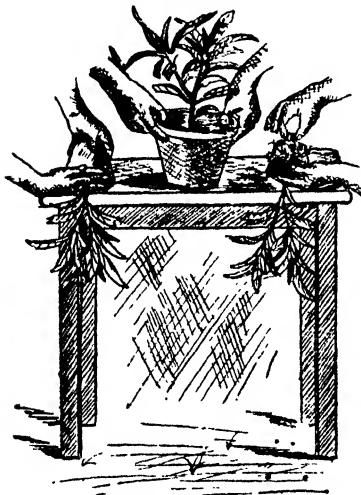


Fig. 14. Re-potting.

of earth on the plant to be potted. The latter should be removed from its pot, by placing the middle and forefingers on each side of the stem and inverting the pot and knocking the rim against the edge of the potting bench as shown in Fig. 14 to the left. The old potsherd on the ball of soil thus lifted and a portion of the old soil where the roots

have not spread should be removed as in Fig. 14 to the right. The 'ball' should then be placed with its stem *vertical* and in the *centre* of the pot, so that the *collar* of the plant (the point in the stem where the roots begin) may be flush with the soil. The soil is

packed firmly around the roots (Fig. 14). Plants which are potted up *hard* are always safer than those in loose soil. In the case of seedlings of annuals, medium firmness will suffice, and is conducive to quick growth. Hard potting (particularly in the case of perennials) renders frequent shifting and re-potting unnecessary, and comparatively smaller sized pots are needed, which means economy and portability.

Top-dressing.

Top-dressing is a means of enriching the soil with manure, without disturbing the roots of a plant. In the case of pot plants, this is usually necessary every three months and is very beneficial in the summer, when it also acts as a mulch, protecting the roots against excessive heat and conserving the moisture.

WATERING.

It would be no exaggeration to say that most of our plant casualties are due entirely to defective watering. Excessive watering of over-potted plants with soil not compact enough at the roots is responsible for most of our losses. Plants in large pots often fail to receive sufficient water. Only the surface is wetted from day to day with the result that the

soil at the bottom of the pot remains dry and the roots decay. Watering should be done at nearly the same time of day always, preferably in the evenings and *either thoroughly or not at all*. Pots having habitually wet soil should receive a stirring of the top soil instead of water at least once a week.

LABELS.

It is of the utmost importance that every one who is interested in practical gardening should know the names of the plants cultivated both to ensure a more intelligent interest in their culture and to accumulate information regarding their habits in a more systematic manner. To this end it is desirable that plants newly introduced into the garden should have a tag or tally. Labels made of smooth pine-wood and painted on one side are now available at a nominal cost. The names can be written on these with an ordinary pencil.

When names written on ordinary tags in pencil are required to be preserved for a considerable time, two tags are generally used and the name written on one is covered by another which has also the name repeated on it, so that the outside one is used for ready reference and the inner one for reference in

case the writing on the outside is obliterated by prolonged exposure to the weather. The two are secured in position one above the other by means of thin copper wire.

PLANT DISEASES AND ENEMIES.

It is obvious that a knowledge of the common diseases and insects which attack plants and of the means of withstanding their ravages is indispensable to success in gardening. The chief enemies of plants are certain bacterial diseases (which the amateur is seldom in a position to investigate), several kinds of fungus such as *mildew*, the various root-feeding insects such as the larvae of several kinds of beetles, the various plant lice, the aphids or the soft woolly masses, adhering chiefly to the underside of plants, such as crotons kept too long in the shade, the 'scale' insects which infest the bark of trees and shrubs, and the various chewing-or biting-insects such as caterpillars, grass-hoppers, beetles, etc., which eat up the leaves or bore into the stems to lay eggs.

General neatness and clean culture of the entire garden, the prompt removal of weeds, the trimming of hedges, etc., are a great help in warding off pests. But this is not generally sufficient, unless the entire

stretch of country in the neighbourhood receives the same scrupulous attention in regard to neatness, which is unthinkable under present conditions.

One of the best remedies against all fungus attacks on ornamental plant material is Ammoniacal Copper Carbonate, as it does not discolour the foliage or flowers. Put one ounce of copper carbonate in a wooden receptacle and add water to make a thick paste. Add to this paste 2 pints of strong ammonia diluted with four parts of water and stir. This makes a blue solution. Add to this 20 gallons of water. Spray with a syringe with a fine nozzle just enough to wet the surface attacked.

For soft-bodied insects such as plant lice, mealy bugs and the brown scale, fish oil soap (obtainable from the Government Soap Factory at Calicut), or Kerosine oil emulsion, or carbolic acid emulsion may be employed very effectively.

For preparing Kerosine oil emulsion, take 8 oz. of common laundry soap and dissolve it in a gallon of hot water. Remove the solution from the fire when it is close to boiling point and immediately pour one pint of Kerosine oil, stirring the liquid rapidly. Take a syringe and pump the liquid into itself for about 15 minutes, until the whole mass becomes lathery. When

properly made, the oil should not separate on cooling. For use on tender foliage, dilute this solution with 5 parts of water. If the oil separates in storage, or if applied too strong, the emulsion is apt to burn the leaves. The plants should not be in the open sun with the spray on the foliage. It is best to spray in the evening, and examine the foliage carefully every 10 or 15 minutes, until the spray dries up, to see if there are any signs of scalding. In the latter case, the foliage should be promptly and thoroughly washed with a soap solution to ward off further injury. If the plants will stand exposed to the sun the next day, the foliage may be syringed with soap solution succeeded by clean water in the morning. For use against caterpillars, the stock solution may be applied in its concentrated form with a brush and the foliage syringed after a while.

For Carbolic emulsion, take one pound of fish oil soap, dissolve it in one gallon of hot water. Add to this one pint of crude carbolic acid and heat the solution to the boiling point for half an hour. This is the stock solution. Every ounce of this should be diluted with 20 ounces of water for use.

There is now on the market a very useful type of contact insecticides known as miscible oils, which are very effective against the red spider and the pests

known as 'scale' insects—very minute organisms, which lie deposited on the bark of hard-wooded plants and suck the sap beneath. They are the most formidable enemy of our rose plants in the summer. The miscible oils are generally marketed under a trade name, such as *Fico*, in the form of concentrated solutions which are usually diluted with fifteen parts of water.

Another equally useful insecticide is made as follows: Take one quart of water and put into it 8 oz. of washing soda and 10 oz. of rosin. Boil the mixture, and while it is still on the fire, slowly add water to make up one gallon. In another vessel take one gallon of water and dissolve in it $1\frac{1}{2}$ lbs. of fish oil soap and boil. When the soap is completely dissolved, mix the two solutions while they are still hot. For use, dilute each ounce of this stock solution with three and a half ounces of water.

Spraying with a decoction made of tobacco stems in which a little soap has been dissolved is an effective insecticide. But the chief difficulty lies in determining the strength or nicotine content of the home-made decoction. A strong solution is apt to burn the leaves. Imported tobacco extract known as "*Black leaf 40*" is therefore much safer to use. It can be diluted with 800 to 1,600 parts of water.

The root-feeding insects are mostly the larvae of beetles that get into the pot composts through manure (especially cow manure) and leaf-mould. These are very injurious. At every re-potting, the soil that is removed and the ball of earth around the roots should be carefully examined, and all grubs found therein should be destroyed. It is often not practicable to use on ornamental plants the arsenical poisons which are usually employed for spraying against the various chewing insects. Where these are very troublesome, place a large barrel in the garden with the inside of the barrel painted with a sticky substance, such as tar, and in the evening place a small nightcandle inside the barrel. The insects are attracted by the light, and their wings are caught by the tar. In this manner many hundreds of injurious insects may be destroyed in a single night, and the many thousands of larvae which they would produce and which would be equally injurious to plant life are thus warded off.

Where ants are troublesome, an easy and effective means of destroying them is to soak small balls of cottonwool with carbon bi-sulphide, and thrust them into the holes from which they emerge. The holes should be closed up immediately. White ants can also be got rid of very successfully in this manner. It should

be remembered, however, that carbon bi-sulphide is a very volatile and highly inflammable substance.

PLANT PROPAGATION.

To most amateurs plant propagation, or the art of multiplying plant material by means of seeds, cuttings, grafting, etc., forms one of the most fascinating aspects of the pursuit of gardening. A sound knowledge of the several methods of plant propagation is also very useful in practice, in ensuring a constant supply of duplicates of plant material which is difficult to replace.

The several methods of plant propagation are by (1) Seed, (2) Cuttings, (3) Division, (4) Layering, (5) Budding, (6) Grafting.

The most common method of multiplying plants is by means of seed. Some seeds remain fresh for many years, others only for a few days; but the majority are dependable for a period of about one year. By very careful packing and storage so as to protect them from moisture and heat, seeds can be preserved in good condition for more than one season. Exposure to moisture before sowing, for however short a period, is as a rule a sure means of spoiling good seed. As success in our seasonal gardening

depends largely on the quality of the seed, it is important that we should obtain our supplies from firms with a solid reputation behind them.

Even the best of seed may fail to germinate through defects in sowing, or, more frequently, through carelessness in storing them. The packets should not be opened before the seeds are required for sowing, and they should be kept in clean dry tins with tight lids, or in stoppered bottles, in a cool dry place.

Seeds often fail to germinate, if they are sown too early in the season, or too late. Seeds which are very hardy may remain in the soil for a long time, and germinate when the seasonal conditions are appropriate. But the great majority of seeds used for flower gardening fail, if they are sown in the wrong season.

In the case of annuals, those which grow in the rainy season are sown after the first showers, 3 to 4 weeks in advance of the actual outbreak of the monsoon, as the humidity, coupled with heat, which usually precedes the rains, is very conducive to effective germination. In the case of the cold season annuals, the sowing is usually done in September to October; the hardier ones are sown earlier, and the more delicate, later. Sowing later than October may secure good

results in point of germination, but the plants raised so late will not have time to mature and flower before the hot weather sets in. At hill stations, nearly all annuals should be sown from March onwards.

Seeds as a rule should be sown in light porous soil and in shallow pans (Fig. 12, 'h' page 47) or boxes or 'flats' (Fig. 7, page 35) rather than in pots. The soil emptied from the pots in which annuals were grown the previous year is usually the best, provided that it is previously exposed for some time to the action of the sun for the purpose of thoroughly aerating it and getting rid of any insects or pests which it may have harboured the previous season. After exposure to the sun, this soil should be passed through a fine sieve so as to secure a uniformity of texture. The more minute the seed, the finer should be the meshes of the sieve in which the soil is sifted. Nearly half the depth of the seedpan should be filled with potsherd and sand, so as to ensure that the drainage is thorough.

After filling the seedpan with soil as above, the soil should be firmly and evenly pressed down and then thoroughly drenched previous to sowing. Before sowing, the excess water in the pans must drain off thoroughly.

The seeds should ordinarily be sown in drills at even distances, and at about the same depth as the thickness of the seed itself, the top soil pressed down, and the entire surface covered with a light and even sprinkling of soil so as to make a layer of about the same thickness as the seed. The pan should then be watered again, with a 'rose' (Fig. 1, page 25), but not heavily. The pan should then be covered with a pane of glass, or a thin wooden board, to prevent the drying up of the top soil and ensure an evenness of moisture and temperature. Every morning the cover should be lifted and re-placed upside down to remove the condensed moisture on the under surface. When the seeds have germinated even partly, the cover should be removed, lest a closed atmosphere should cause the tender seedlings to damp off, or grow lanky.

The seedpans should, as a rule, be placed in the shade. When the seedlings are fairly well established, they should be hardened to the normal conditions of the weather as quickly as possible, by being exposed to the direct action of the sun except during midday. The pans should remain in the open in the night time, care being taken, however, to protect the seedlings against heavy rains. Usually, when they have 3 pairs of leaves, they should be transplanted into nursery pots, of 3" or 4" size, or into pans. In transplanting, only

the most thrifty and vigorous seedlings should be selected. When the seedlings are from about 4 to 6 ins. high, the top pair of leaves should be pinched out, to induce bushy growth.

Minute seed, such as that of petunia, should be mixed with sifted soil, 3 to 4 times the quantity of seed, and gently and evenly sprinkled with the hand. An additional layer of soil on the top is unnecessary and might cause considerable delay in the germination. After spreading the seed, the soil should be firmly and evenly pressed down but watering a second time is not necessary, until the top soil gets dry.

In the case of extremely fine dustlike seed, such as that of *Begonia*, *Achimenes*, *Gesnera*, *Gloxinia*, *Streptocarpus*, etc., a special device is necessary to permit of watering being done by capillary action, so that the surface of the soil may remain absolutely undisturbed, until the seedlings are firmly established.

The device shown in Fig. 15 (which the writer has evolved out of the numerous methods hitherto employed for this purpose) may be regarded as almost fool-proof. It never fails to secure the germination of good seed, however minute, and the fullest safety is afforded to the young seedlings. This contrivance is a double pan as it were, a pan within a pan

with one side common to both. The inner is filled with powdered brick and charcoal for the lower half

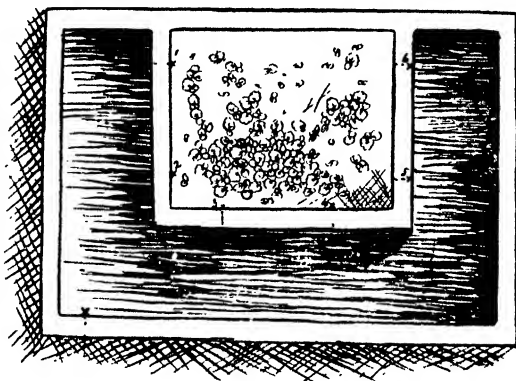


Fig. 13. Seedpan for Begonias, etc.

of its depth and this is covered with very finely sifted soil to within $\frac{1}{4}$ inch of the rim. The soil is then firmly pressed down. The seed is mixed with fine sand, or the sifted soil, 5 times its quantity, and evenly spread on the top. The outer pan is then watered to the level of the soil in the inner. In a few minutes the water slowly rises through the holes (1 to 6 marked x) to the level of the soil. The drainage hole in the outer pan at *a* which remains plugged during this time (with a piece of cork or a little clay) is now opened and the water is fully drained off.

During the latter process, the soil will settle down firmly and the minute seeds under the gentle force of the receding water will be drawn underneath just enough to give them a thin layer of soil as cover. The pan should thereafter remain covered and placed in the shade, until the seeds germinate. Water should be given only when the surface appears somewhat dry. In practice, watering once in 3 days will be found sufficient. The same results are obtainable by using two pans of different sizes, placed as in Fig. 12, 'h'.

Cuttings.

Next to seed, cuttings are the most important means of propagating plants. Plants raised from cuttings come 'true' to the parent plant. But seedlings are not quite dependable in this respect, although in the case of annuals this difficulty is hardly present. Another advantage in regard to cuttings is that plants of a considerable size can be produced much sooner than from seed, and they flower when they are yet comparatively smaller in size. Consequently, when it is desired to raise flowers very early in the season, and the weather is still too warm for sowing seeds, cuttings can be employed for the purpose, as in the case of Pinks (*Dianthus*), Verbenas, Salvias, etc. But the seedlings, as a rule, produce more vigorous and floriferous plants than those raised from cuttings.

Cuttings should usually be 2" to 3" in length, and it is ordinarily sufficient to have 3 to 4 eyes, or nodes, on each cutting. They should as a rule be taken with a knife almost as sharp as a razor.

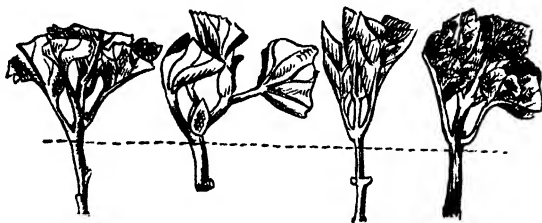


Fig. 16. Soft-wooded Terminal Cuttings.

The bottom cut should be immediately *below* a node, and the top immediately *above* a node (as in Fig. 11), except where terminal cuttings are needed (Fig. 16). The leaves on the lower portion of the cutting, which is inserted into the soil, should be removed by careful trimming, so as not to injure the stem. If the cutting is one which has large leaves, or dense foliage, the leaves should preferably be cut back to a third of their size, so as to prevent excessive transpiration. The trimming also helps to prevent overcrowding in the propagating pan or bed, which starts a fungus and causes the cuttings to damp off. Cuttings should not be exposed to the direct sun. They are usually

gathered in a basket or a wooden flat (Fig. 7), lined with a piece of paper which has been thoroughly wetted, and must remain completely wrapped in a piece of wet paper, in case they are not put down immediately.

Cuttings of succulent plants, such as the various kinds of Cactus, should be put away for a couple of days as a preliminary to being put into sand; otherwise they are apt to damp off.

Plain riversand is the best medium for striking cuttings of soft-wooded or succulent plants. In the case of hard-wooded cuttings, the sand should be mixed with a little leaf-mould, or light loam, to secure a more retentive soil. They should be set in drills to a depth of one-third to half their length, and the soil or sand about the stem should be *firmly* pressed down. They should remain in the *shade* with plenty of diffused light for the first few days, and gradually hardened to the action of sunlight. If the leaves on them are young and tender they should receive a light drizzle of water with a 'rose' (Fig. 1, page 25), two or three times a day. They may be watered about once a day.

Success with cuttings depends largely on the type of wood employed for the purpose. In some cases,

such as Begonias, Chrysanthemums, Dahlias, Poinsettias, etc., only terminal cuttings do well. In the case of Roses, Franciscea, etc., moderately mature wood, an inch or two below the tip of a new branch, is the best. In other cases, such as Plumbago, the short spurs, or side-shoots from the previous season's wood, taken with a *heel*, give the best results. As a rule, when cuttings of young wood succeed, these should be preferred.

Araucarias and many of the coniferous plants, and also those of a 'weeping' habit, make normal growth only when vertical shoots are selected for cuttings. Lateral shoots, in these cases, retain their horizontal habit.

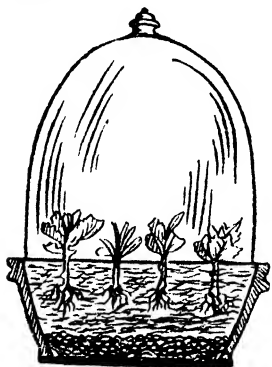
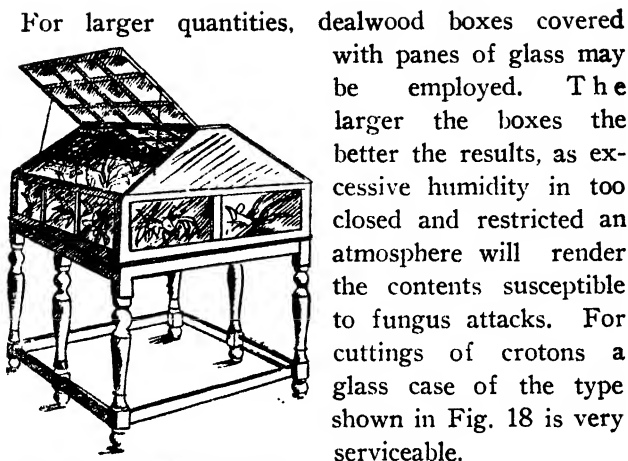


Fig. 17. Bell jar over Cuttings.

Soft-wooded cuttings root more quickly than the hard-wooded ones. When the cuttings require a long time to form roots, or carry tender foliage which is apt to be injured by excess of transpiration, they need artificial aids. A good sized bell jar inserted over the propagating pan is often a sufficient protection (Fig. 17).



**Fig. 18. Glass Case for
Crotons, etc.**

In the case of cuttings which root with difficulty, the glass case or frame should be furnished with what is called *bottom heat*. The frames for this purpose are described under "Garden Structures" (Figs. 3 and 4, pages 32 and 33).

In selecting cuttings for propagation with bottom heat, terminal young wood, which has just matured its top leaves, should be preferred. The cuttings are potted up in either sand, or sand mixed with leaf mould in the case of heavier wood, in little 2" pots, and plunged in the layer of sand covering the heap of fermenting manure inside the frame. The warmth

of the air inside should be just perceptible to the hand. When the warmth is more than this, it should be reduced by sprinkling a little water and increasing the ventilation. During the first few days the top should remain mostly closed to conserve the warmth inside and to ensure an even temperature. But the leaves should be wetted from time to time. After the first week, ventilation should be slightly increased. The top should remain raised more and more each day when a good percentage of the cuttings have formed roots. Exposure to direct sun should be avoided, as also sudden increase of ventilation. When the cuttings are well rooted, the top of the frame should be left open all day. They should next be removed from the frame and placed in the shade for about a week, after which they may be potted off in 4" pots, and thence grown on like seedlings.

Propagation by cuttings is not uniformly successful at all times of the year. It is best done when the mother plants from which cuttings are taken are just starting into their seasonal growth.

Layering is a modified form of propagation by

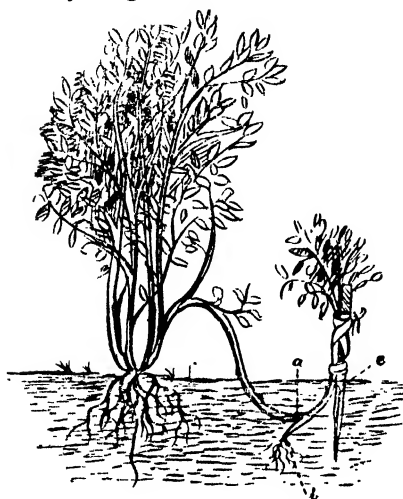


Fig. 19. Layering.

cuttings. A branch or shoot is cut across through half of its thickness, between two joints or leaf bases as at *a* (Fig. 19), and the stem is thence slit upwards close to the base of the joint, so that it forms what is called a 'tongue'

as at *b*. This portion of the stem which is slit through is covered with soil to a depth of about 2" to 3", and placed in position by means of a brick or other weight. The top portion of the branch is then held straight by means of a stake as at *c*. About 2 weeks after the layer is put down, a notch or cut is made in the stem immediately behind the joint preceding the one which is placed under the soil. This hastens the formation of roots at the extremity of the 'tongue.' After an-

other week or ten days, the notch should be deepened. Later, in another 2 weeks, when the layer has formed roots, it is severed from the mother plant.

The main advantage of propagation by layering is that it may be done at any time of the year, including the hot summer months. Another is that much larger plants can be obtained than from cuttings in a comparatively short time.

To hasten rooting, the tip of the layer should be pinched out about a week after the layer is put down.

Gootee.Fig. 20. *Gootee.*

and the stem supported by means of a stake. When roots emerge through the sack cover, the notch is

is not convenient to layer an erect and brittle stem it may be ringed, or slit as in layering, and a ball of wet earth placed round it, and secured in position with a piece of sack cloth and kept constantly wet, either by means of a pot from which water trickles slowly to the ball of earth, or by syringing regularly every day. After 2 or 3 weeks a notch is made in the stem below the ball of earth

deepened to sever the upper portion, which is then placed in a pot of sand in the shade for a week and then potted up. Crotons are usually propagated in this manner.

Offsets.

All bulbous plants produce in the course of their growth little bulblets at the base of the mother-plant. When the mother-plant has completed its seasonal growth, the bulblets are removed, and either stored away separately to be planted the next season, or grown on, in a separate nursery bed, where in course of time they mature, and may then be removed to beds or pots for flowering. Where it is desired to multiply the bulblets rapidly, the centre bud of the mother-plant is destroyed.

Tubers.

Some plants, such as the Dahlia, produce in the course of their growth what are called tubers. After the plants have finished their seasonal growth, the tops, which slowly die down, are removed, and the tubers are allowed to dry up gradually by withholding water. They are then stored away in a cool dry place, or embedded in dry sand,

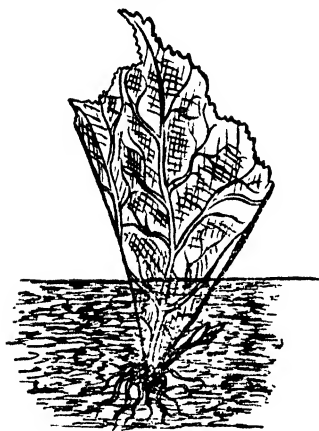
until they show signs of sprouting on the advent of the next growing season. They are then divided into as many 'sets' or portions as may be desired, (provided there is at least one 'eye' on each portion so divided), and started into growth as individual plants.

Suckers.

Some plants, such as chrysanthemums, perennial asters, etc., are in the habit of throwing up shoots from their roots, which can be removed with a portion of the roots attached, and potted up as separate plants. In other cases, such as *Hedychium* (Orchid Lily) and Cannas, the rhizomatous stems develop buds from which shoots are thrown up. These shoots may likewise be removed and potted up.

Division.

In the case of plants which grow in clumps where each new shoot develops some roots in the portion covered by the soil, lifting the clump and separating it into several portions, each with some roots attached, is an excellent means of propagation. This method is particularly helpful in the case of *Plumbago*, several varieties of *roses*, *palms* and *orchids*, *Linum*, *Ixora*, etc.

Leaf cuttings.**Fig. 21. Leaf Cutting.**

Nearly all the members of the *Gesnera* family, such as *Gloxinias*, and *Saint-paulia*, and many varieties of *Begonias*, particularly of the *Rex* type, are easily propagated from single leaves, or leaf cuttings. Where whole leaves are used, these should be cut at the base and inserted in sand to the depth of about a third, when they form roots, and throw up a shoot which is potted up. In the case of *Rex Begonias*, the leaf may be cut into as many triangular pieces as there are the main ribs from the edge down to the base of the leaf. These pieces should be placed in sand in small thumb pots to a depth of about a third, and the pots placed under a glazed frame, or in a dealwood box, covered with a pane of glass. In less than four weeks, under favourable seasonal conditions, these cuttings throw up shoots which may be potted up like seedlings.

Root-cuttings.

In the case of plants which throw up suckers from their roots, an easy means of extensive propagation is to prepare cuttings of roots and place them in a pan of sand.

Budding.

This method of propagation is largely employed in propagating rose plants and may with equal advantage be used in the case of a great many ornamental trees and perennial shrubs.

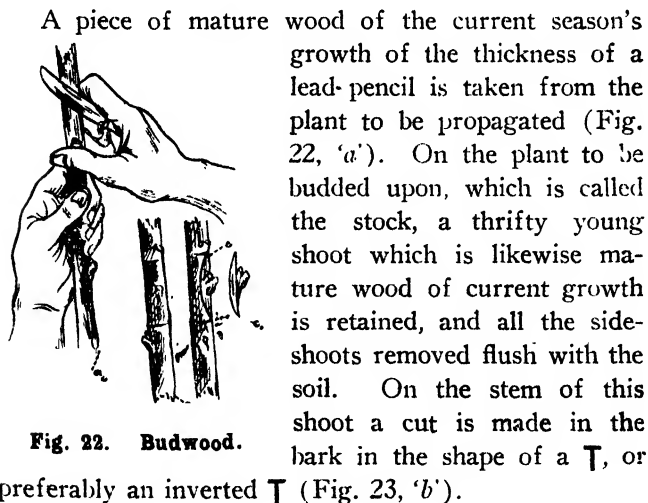


Fig. 22. Budwood.

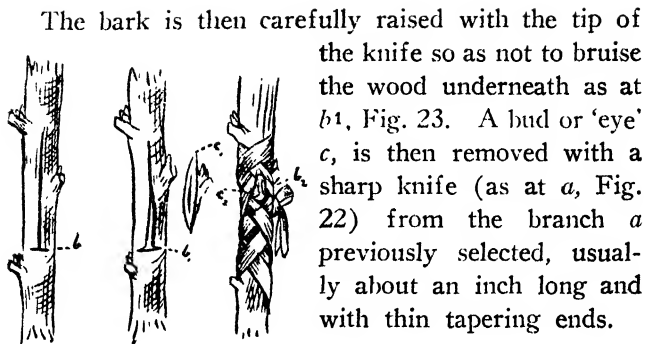


Fig. 23. Stock Budded on.

The bark is then carefully raised with the tip of the knife so as not to bruise the wood underneath as at *b1*, Fig. 23. A bud or 'eye' *c*, is then removed with a sharp knife (as at *a*, Fig. 22) from the branch *a* previously selected, usually about an inch long and with thin tapering ends. This bud (*c*), is carefully inserted under the bark by pushing it up, until its lower end (where an inverted **T** is used) is just above the base of the **T**. The flaps of the raised bark are then closed down upon the bud, and secured in position with a piece of wax-tape tied moderately tight over the incision, leaving only the 'eye' exposed as at *b2* (Fig. 23). In two to three weeks, the bud (if the operation has been successful) swells into growth as at *c2* (Fig. 23) or at least remains green, when the stem budded upon should be lopped about 2 inches above the bud, *i.e.*, cut through half or three-quarters of the stem and tilted on the side, but not severed. The bud then grows into a shoot more rapidly, when, the lopped portion should be severed, and the tape re-tied less tightly,

and the new shoot should be given a vertical direction by being tied to the stump of the stock above the bud with a piece of tape. When the shoot has hardened up, the tape should be removed and the shoot cut back, from a half to a third of its length according to the vigour of the shoot, to produce lateral growth. (It was the practice, until recently, to remove the wood underneath the bud, but it has now been established that this process which involves waste of time and the risk of injuring the bud, is quite unnecessary).

To ensure success in budding, the following points should be noted :

The stock and the bud should be different varieties of the same species, or they may be different species of the same genus, but not wider apart in their affinities, except in rare instances.

The stock should be trained to one stem for some time previously and all side shoots on it below the point where the bud is to be inserted and all suckers should be removed at least 4 weeks before the actual operation.

The stock should be in an active state of growth at the time of budding, and nothing should be done to check the vegetative vigour of the plant budded on, until the bud '*takes*'. The roots should not be disturbed even slightly.

No sidegrowths on the stock below the bud should be permitted. After union has taken place, all other shoots whether above or below the bud, should be rubbed off.

The bud should be placed as low as possible on the stock. Usually 6 to 12 inches from the base is a convenient height. But in the case of standards in a suitable climate, it may be inserted somewhat higher, but the farther it is from the base, the less vigorous it is in its growth.

The entire operation should be done as quickly as possible.

Budding should not be attempted when the bark of the stock does not easily separate from the wood underneath.

Inarching.

In a tropical climate, budding is often difficult, especially in the case of hard-wooded plants or shrubs with a very thin brittle bark. In such cases, propagation may be done by what is called *Inarching*, Fig. 24. The stock is pared off on one side to a length of about 3 inches, and through nearly half of its thickness, preferably at a height of 6 to 12 inches from the base as at *a* or *a*¹. The plant to be propagated is

then placed by its side and a branch of nearly the same thickness is then pared off on one side, and to



Fig. 24. Inarching.

the *same* length and depth as the paring on the stock as at *b* or *b*¹. The two exposed surfaces are then held together in close contact with a piece of wax-tape as at *a*, *b*. These two surfaces unite in 6 to 8 weeks after which the stock is headed *above* the union, and the branch is severed *below* the union.

By Grafting.

Grafting is nearly the same process as budding, except that in the former, instead of a single eye, a much larger piece of wood known as the 'scion' is inserted into a split made in the *stock*. There are several modes of grafting, known as cleft-grafting, side-grafting, whip-grafting, etc., depending on the manner in which the scion is inserted into the stock. In flower-gardening, herbaceous grafting is the only type which may be employed with advantage, especially in the propagation of crotons. The stock is headed at the desired height, usually 8—12 inches from the base, immediately above a joint or leaf base, and a slit is made in the middle of the stem to a depth of

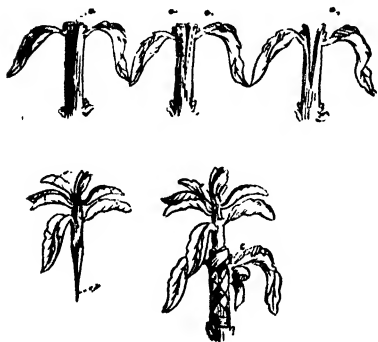


Fig. 25. Herbaceous Grafting.

about 3 inches as at *a*, Fig. 25. The leaf or leaves at the joint or node are carefully retained. Part of the wood in the slit portion of the stem is pared off on both sides from the lower end upwards as shown by the

dotted lines at a^1 so that the wood taken off from the two halves of the split may provide space to receive a wedge as at a^2 . The scion, which is of the type of a cutting to be propagated, and of nearly the same thickness as the stock, is taken from the plant selected for propagation, and the lower portion, to the same length as the slit in the scion, is pared off on two opposite sides and shaped like a wedge as at b . The latter is then fitted closely into the slit in the stock and held in position tightly by means of a wax-tape as at c .

The scion should preferably be a piece of mature dormant wood of the last season's growth. A paper cap on the scion will help to prevent exposure to the sun. A little cottonwool on the scion kept moist during the first week or ten days will prevent the scion from drying up before it unites with the stock. Crotons, Ixora and countless other shrubs are easily propagated in this manner at almost any time of the year, but more easily during the cooler months.

The wax-tape for grafting and budding is prepared as follows: Take a piece of *thin* cambric or muslin about a yard long. Cut it lengthwise into strips each about 12" broad. Roll these strips on bamboo sticks of the thickness of a lead-pencil. Next take crude paraffin wax 1 part, bees wax 2 parts, and

rosin 3 parts by weight. Melt these over a slow fire. then drop into this liquid the sticks on which the cloth is rolled, and continue to stir these over the fire for another 10 minutes, remove the sticks while the liquid is still warm, and allow them to dry. When required for use, unroll the cloth to a length of about 15" each time, and tear off into thin strips along the warp of the cloth, each about $\frac{1}{4}$ inch wide. Drawn tightly through the fingers, 3 or 4 times, just before use, these strips of tape become softer and more pliant. The liquid left over in the vessel may be poured off into a bottle, and used when necessary as a dressing for plants on wounds caused by pruning, or as grafting wax. A little warmth restores it to liquid form.

GENERAL PRINCIPLES OF PLANT CULTURE.

Plants should not be put into the ground until they are sufficiently well established in nursery pots and large enough to stand the less protected surroundings outdoors.

At every potting or repotting, the size of the pot should be proportionate to the size of the plant. Seedlings and small rooted cuttings should, as a rule, be potted up in the smallest pots that will take them, 3" pots are generally suitable. When these cannot

be had, pans may be used. In the latter case, the seedlings may be planted about 2 inches apart, providing the leaves do not overlap.

In transplanting, the portion of the soil covering the roots should not be disturbed more than can be helped. A liberal sprinkling of sand over the cut ends of roots, before covering them with soil, helps the roots to withstand injury better.

The soil around the roots on transplanting should be pressed down *firmly*. Else, the interspaces among the particles of soil serve as pockets for excessive water which proves injurious to the roots.

When the top of a plant to be transplanted is in 'flush', i.e., consists of soft and tender growth, it is often a good plan to cut back the young tips to firm wood, to prevent excessive transpiration.

Plants newly transplanted should be protected from the sun for about 3—5 days, as the roots must have time to adjust themselves to the new soil and begin to function actively again before they are taken into the open.

The first watering, immediately after transplanting, should be done thoroughly, so as almost to drench the roots. Thereafter, during the first week or ten days,

water should be given very sparingly, but the top soil should be stirred to check the rapid evaporation of the water underneath. On lifting a plant from its pot for transplanting, or repotting, if the ball of earth shows signs of excessive wet, the first watering should preferably be deferred until the next morning, so that the excess of water may be drained off by the surrounding soil.

The drainage should be effective and thorough. Otherwise no plant, however hardy, can continue in vigorous growth. This is ensured by placing plenty of coarse material at the bottom, such as gravel, debris, potsherd, sand or charcoal, and preventing the clogging of the drainage holes in the case of pot-plants.

Plants should not be shifted into larger pots, until those in which they are already growing are filled with roots. Over-potting (*i.e.*, using a pot larger than is necessary) tends to produce weak and succulent growth and retards the normal maturity of the plant. This point needs to be emphasized more than any other, as it is a universal failing among unskilled gardeners to use pots which are 3 to 4 times larger than the requisite size. In the majority of cases, over-potting results in excessive moisture at the roots, which means inevitable decay.

A plant which is pot-bound (after it has attained bearing size) comes more rapidly into bloom than when it is continually shifted into larger pots. Repotting a plant with fresh soil and giving it more root room tends to increase its vegetative growth to the detriment of flower-buds.

Plants that tend too prematurely to run into flower should have their flower-buds pinched out, in order to induce more lateral growth and greater vegetative vigour. This is very necessary in the case of most annuals.

Plants which are intended to be put into the ground, especially seedlings of large trees, should not remain too long in nursery pots. One year old seedlings are, as a rule, more thrifty when planted out than larger ones which have become pot-bound for a long time.

Plants which are required not to out-grow the desired size should be restricted in their root room by being re-potted each season into the same size of pot as before. This is particularly applicable to palms and other foliage plants which are intended for decoration indoors. The secret of keeping them dwarf is to give them fresh soil to keep them healthy, but not a larger pot, lest they should attain too unwieldy a size. Where a plant which has become pot-bound is required to be kept dwarf, the roots may be cut back

to half their size with a clean sharp knife, and the old soil completely shaken off in order that the limited size of the pot may nevertheless find room for sufficient fresh soil to keep the plant in a healthy condition.

Plants which have been for a considerable period in the shade should not be removed all of a sudden into the open sun, as their foliage is apt to be blistered. They should be gradually hardened to exposure. This is done either by moving them into the open on a cloudy day, or by protecting them from the midday sun for the first two or three days.

No plant, however hardy normally, should remain indoors for a prolonged period. House plants should preferably be put out every night, and, without fail, replaced by others every week or ten days, and brought in again by rotation. Even verandahs and window-sills do not present a normal aspect to plants in regard to light and fresh air. Plants intended for such places should therefore be changed every few days.

Plants in pots should receive a top-dressing with fresh compost every three months and re-potting every six months, or at least once a year.

Plants should not be transplanted nor their roots disturbed under adverse conditions of weather. They

should as a rule be re-potted when they are in a dormant condition, or when they are about to start into their seasonal growth.

Plants, such as Cannas, Hedychium, etc., which send up suckers from the base should have their flower stalks cut back flush with the soil as soon as they have finished flowering, as the same suckers do not flower a second time. But when there are only one or two suckers to a plant, they should not be removed, even if they have done flowering, until the new suckers are fairly well advanced.

Plants in pots in active growth should not be moved about frequently from place to place, except periodically for seasonal protection against rain or sun, the reason being that the leaf surface at any given place adjusts itself in accordance with the direction of sunlight, and this adjustment also determines which of the particular lateral buds shall be stimulated ahead of the others, for further growth. The result of moving a plant frequently from its place is that the leaf surface must adjust itself afresh each time and the stimulus also becomes diffused over a new set of buds with every change of place or of aspect in relation to the sun. This is not conducive to rapid normal growth. Seedlings which are in pans and often kept on the window-sill generally receive light only from one

direction and they lean too pronouncedly in the direction of light; this must be prevented by keeping these pans in fair weather out-doors in the shade or partial shade in order to correct this lateral habit.

Mulching is a very valuable device for protecting the roots of plants in excessive hot weather and for preventing them from suffering from drought. Mulching consists in stirring the top 2 or 3 inches of soil, or in covering the top soil with small pieces of broken brick, or with leaf-mould, to conserve the moisture at the roots.

PLANT MATERIAL.

Hedges.

Where these are intended for boundaries as live fences, woody climbers, or scandent shrubs, which are thorny, make effective barriers. *Bougainvillea glabra* (spiny), *Pereskia Bleo* (a thorny climbing variety of cactus), *Caesalpinia Bonduc*, *C. Sappan*, and *Carissa carandas* produce almost impenetrable barriers. Bamboos of several kinds, *Agave americana* (the American aloe), *Pandanus* (the screw pines), the latter, particularly on low marshy ground, *Yucca* and several of the erect growing species of *cactus* (such as *cereus*), and *Pithecolobium dulce* may also be used with equal

advantage. The last named, which is known as the Madras thorn, is one of the most extensively used. It can be clipped to any height desired.

The plants named above are generally suitable only for large gardens, as their very rank vegetative growth is not desirable close to a residence. For less formidable barriers, the following may be used:

Casuarina equisetifolia.

Duranta Plumierii (Golden dewdrop).

Lawsonia alba (Henna).

Malpighia glabra.

Murraya exotica.

Phyllanthus nivosus.

P. myrtifolius.

Punica granatum.

Among flowering shrubs suitable for low hedges, the following are important:

Ixora stricta (dwarf var.).

Linum trigynum (*Reinwardtia trigyna*).

Pentas carnea.

Plumbago capensis.

Russelia.

Edgings.

As dwarf edgings suitable for paths and borders, the following are useful:

Alternanthera of several species and varieties.

Biophytum sensitivum.

Caladium argyrites.

Phalaris arundinacea.

The following trailing plants are also useful for ribbon effect :

Evolvulus.

Impatiens repens.

Pilea microphylla.

Portulaca.

Scutellaria andamanensis.

Tagetes.

Torenia asiatica.

Vittadinia.

HANGING BASKETS.

Plants of a trailing habit produce a charming effect when placed in hanging baskets or pans on verandahs and in conservatories. The following perennials are among the most suitable for the purpose :

Torenia asiatica (bears pretty purple flowers with yellow throat).

Vittadinia australis (Australian Daisy).

Cyrtodeira fulgens (Pretty velvet brown leaves and bright crimson flowers).

Zebrina pendula (The wandering jew).

Ivy Geraniums, several varieties.

Verbena.

Asparagus Sprengeri.

Pilea microphylla.

Coleus Rehneltianus.

Impatiens repens (flowers bright yellow).

„ Sultani (white-flowered).

Lobelia erinus, *Vinca minor*, *V. minor variegated*, and *Begonia Lloydii* are suitable for the cooler stations. The last mentioned stands almost unsurpassed in its beauty and elegance as a basket plant.

THE ROCK GARDEN.

Wherever the grounds are sufficiently extensive, rockeries, like water-gardens, should find a place in the home landscape. They are also appropriate as the main feature in small gardens. Little mounds of stone can be built of laterite (leaving pockets here and there for good soil) like a range of little hills in miniature suggesting as much naturalness as possible. These should be arranged along the fringe of a group of large trees, so that some of the groups of stones may have a more sunny aspect than others to permit of a wide selection of plant material. There should be enough room between the several mounds for little foot-paths, so that close access may be had to each individual

plant set in the rockery. The effect is considerably heightened, if provision is made for little pools of water among the stones. Most of the plants suitable for a conservatory can be successfully planted in the pockets of earth among the stones in places where there is sufficient shade, the more exposed portions being reserved for plants of the cactus group and others of similar habits of growth.

Plants suitable for portions of the rockery more or less sheltered from the sun are: *Begonias* (fibrous rooted), *Saintpaulia*, *Cyrtodeira*, *Fittonia*, *Peperomia*, nearly all the tropical ground orchids, *Marantas*, *Anthuriums*, *Dracænas*, *Kæmpferias*, *Alpinias*, *Costus*, *Streptocarpus*, *Gloxinias*, *Caladiums*, etc.

For situations which are exposed to the sun during the greater part of the day except midday, the following plants are suitable. Nearly all bulbous plants such as *Eucharis*, *Eurycles*, *Zephyranthes*, the Transvaal Daisies (*Gerbera Jamesonii*), *Violets*, the variegated *Pineapple*, perennial *Torenia*, the flowering *Coleus*, *Achimenes*, *Spathoglottis*, *Oxalis*, etc.

That portion of the rock-garden which stands fully exposed to the sun will succeed best when planted with the various kinds of dwarf cactus, such as *Mammillaria*, *Echinocactus*, *Cereus septentinus*, *Billbergia*,

Aloes, *Furcræa gigantea* (variegated), *Yucca gloriosa*, also *Kalanchoë*, *Phyllocactus* and *Stapelia*, of which there are several species.

ORNAMENTAL TREES.

Trees in a garden serve a variety of purposes. They are useful as a screen against unsightly surroundings. They secure privacy. They provide welcome shade in the hot weather and shelter to a great many plants. They are a barrage against hot winds. They are very refreshing to the eye. Above all, they are great ornaments, if the right kinds are planted in the right place.

In S. India there is an enormous wealth of material in regard to trees suitable for gardens, and the difficulty is to resist the temptation to plant too many. The following are a few of the more important ones. Brief cultural notes on these are given in the alphabetical list :

Acacia auriculiformis.

Adansonia digitata.

Adenanthera pavonina.

Albizzia Lebbek.

Araucaria Cookii.

„ *Cunninghamii*.

„ *excelsa*.

Artocarpus incisa.

Areca catechu.

Azadirachta indica.

Barringtonia speciosa, *B. acutangula*.

Bauhinia purpurea.

„ variegata.

Brownea coccinea.

Butea frondosa.

Caesalpinia coriaria (Divi-divi).

Callistemon lanceolata. (Bottlebrush).

Calophyllum inophyllum. (Alexandrian

Laurel;

Cananga odorata.

Carvota urens.

Cassia fistula. (Indian laburnum).

„ Javanica.

„ nodosa.

Casuarina equisetifolia.

Citrus decumana.

Colvillea racemosa.

Couroupita guianensis. (Cannon-ball tree)

Dillenia indica.

Erythrina indica.

Eucalyptus rostrata.

citriodora.

Eugenia jambolana.

Feronia elephantum.

Ficus Benamina.

„ *Roxburghii*.

„ *bengalensis* (Banyan).

„ *religiosa*.

Filicium decipiens.

Gliricidia maculata.

Grevillea robusta (Silver oak).

Jacaranda mimosaefolia.

Kigelia pinnata.

Lagerstroemia flos reginae.

„ *tomentosa*.

Magnolia grandiflora.

Melia Azadirachta (Persian lilac).

Millingtonia hortensis.

Oreodoxa regia (Royal Palm).

Pandanus odoratissimus.

Parkia biglandulosa.

Peltophorum ferrugineum.

Pisonia alba (Lettuce tree).

Pithecolobium saman (Rain tree).

Plumeria acutifolia (Temple tree).

„ *rubra*.

Poinciana regia (Flame of the Forest; Gold Mohur).

Polyalthia longifolia.

Pongamia glabra.
Pterospermum Heyneanum.
Ravenala madagascariensis (Traveller's tree).
Schinus molle (Californian pepper tree).
Spathodea campanulata.
Sterculia acerifolia.
Swietenia Mahagoni, *S. macrophylla*.
Tamarindus indica.
Tectona grandis (Teak).
Terminalia catappa.
Thespesia populnea (Indian tulip tree).
Thuja orientalis (Arbor vitæ).
Vateria indica.

SHRUBS.

The following ornamental flowering shrubs are suitable for the plains. Those marked* are of more than average merit. Those marked† are suitable for places of medium elevation but require greater care in their cultivation on the plains.

†*Abutilon*.
 **Acalypha sanderiana*, *A. tricolor*, etc.
Allamanda violacea, *A. grandiflora*.
 †*Ardisia crenata*.
Asclepias curassavica.
Asystasia chelonoides.

Barleria cristata; var. *rosea*; var. *Gibsonii*; var.
strigosa.

Bauhinia candida.

* „ *Galpinii*.

**Bougainvillea spectabilis*, var. *Scarlet Queen*.

**Brunfelsia americana*.

**Caesalpinia pulcherrima*.

Cassia corymbosa.

†*Cestrum aurantiacum*.

† „ *elegans*.

* „ *nocturnum*.

**Chiococca racemosa*.

*†*Camellia*.

Clerodendron fragrans.

„ *inermis*.

„ *macrosiphon*.

*† „ *nutans*.

* „ *paniculatum*.

* „ *Fallax*.

Costus speciosus.

**Crossandra infundibuliformis*. (*Orange and yellow varieties*).

Daedalacanthus nervosus.

Datura.

Dombeya.

**Duranta Plumierii*.

* „ *Ellisii*.

- Polygonum punctatum.*
 **Poinsettia.*
Quassia amara.
 **Reinwardtia trigyna.*
 **Rondeletia.*
 **Russelia.*
 **Salvia azurea.*
 *†*Sophora violacea.*
 *†*Spiraea peruviana.*
 *†*Streptosolen Jamesonii.*
Strobilanthes.
 **Tabernaemontana coronaria*; var. *florepleno.*
 **Tecoma capensis.*
 * ,, *stans.*
 *† ,, *Smithii.*
 **Thevetia nereifolia.*
 **Thunbergia (Meyenia) erecta.*
 * ,, *Kirkii.*
 †*Wigandia.*

ORNAMENTAL FOLIAGE PLANTS.

- Acalypha.*
Alpinia.
Aralia.
Arundo Donax variegatum.
Bambusa (Dwarf ornamental bamboos).

Carludovica palmata.
Codiaeum (Crotons).
Cycas (Cycads).
Dracaena.
Eranthemum.
Excaecaria bicolor.
Gynura bicolor.
Graptophyllum hortense.
Heliconia.
Jatropha multifida.
 Palms.
Panax.
Pandanus (Screw pines).
Phyllanthus.
Sanchezia nobilis.
Strelitzia (Bird of Paradise).

ORNAMENTAL POT PLANTS.

Those marked† are suitable for places of medium elevation :—

Achimenes.
 †*Aeschynanthus*.
Anthurium.
 †*Aphelandra nitens*.
Asparagus plumosus.
Aspidistra lurida, var. *variegata*.

Asters (perennial).

†Azalea indica.

Begonias, fibrous-rooted, B. Rex, and †B. tuberous-rooted.

†Bertolonia marmorata, B. superba.

Billbergia rosea, B. sanderiana.

Caladium.

Calathea sp.

Chrysanthemum.

†Cineraria.

Coleus.

Costus.

†Cyclamen.

Cyperus.

Cyrtodeira.

Dieffenbachia.

Dracaena.

†Epiphyllum (Christmas cactus).

Ferns.

Fittonia.

†Freesia.

†Fuchsia.

†Genista.

Kæmpferia.

†Geranium.

†Gesnera.

†Gloxinia.

†Hoffmania discolor, H. Ghiesbreghtii.

†Hydrangea.

Kalanchoe.

Impatiens sultani, I. repens and I. Holstii
(Perennial Balsams).

Maranta.

Oxalis.

†Primula chinensis, †P. obconica.

Saintpaulia ionantha.

Sinningia speciosa.

†Spiraea japonica.

†Streptocarpus.

Torenia asiatica.

†Violets.

ORNAMENTAL CREEPERS AND CLIMBERS.

Those marked* are of more than average merit.

**indicates exceptional merit. †indicates that they are suitable for medium elevations. (F) denotes ornamental foliage.

*Allamanda grandiflora.

*Antigonon insigne *A. leptopus, *var. albiflora.

**A. Guatemalensis.

Argyreia speciosa (F).

Aristolochia elegans, *A. gigas.

- **Asparagus plumosus*.
- **Beaumontia grandiflora*.
- ***Bignonia venusta*, **B. magnifica*, *B. gracilis*.
- **Bougainvillea spectabilis*, **B. cypheri*, vars.
- **Mrs. Butt, and **Scarlet queen.
- **†*Buddleia madagascariensis*.
- **Chonemorpha macrophylla*.
- **Cissus discolor* (F).
- ***Clematis*.
- **Clerodendron Thompsonii*.
- **Congea tomentosa*.
- Derris scandens*.
- *†*Dipladenia amabilis*.
- **Echites rubro-venosa*.
- **Ficus pumila*, **F. repens* (F).
- **Gloriosa superba*.
- **Hoya carnosa*.
- **Ipomoea carnea*, ***I. Briggsii*, ***I. Horsfalliae*,
- **I. Learii* (Morning Glory), *I. Quamoclit*.
- ***Jacquemontia violacea*.
- ***Jasminum sambac*, *J. pubescens*.
- ***Lonicera japonica*, *†*J. Hildebrandiana*.
- **Monstera deliciosa* (F).
- **Passiflora coerulea*, *P. laurifolia*, †*P. vitifolia*.
- **Pereskia Bleo*.
- **Pergularia odoratissima*.

- ***Petrea volubilis*.
- **Porana paniculata*, *P. volubilis*.
- **Pothos argenteus*, *P. aureus* (F).
- **Quisqualis indica*.
- *†*Rhynchospermum jasminoides*.
- **Roses, †Pearle de Lyons, Marechal Niel,
†American pillar, etc.
- ***Roupellia grata*.
- ***Solanum Wendlandii*.
- ***Stephanotis floribunda* (Creeping Tuberose).
- **Thunbergia grandiflora*, ***T. alata* (Black-eyed Susan), *T. fragrans*.
- ***Tristellateia australis*.
- **†*Wistaria sinensis*.

Alphabetical list of plant material, with brief description and cultural notes.

Abelia.

Caprifoliaceae.

Showy flowering shrubs of China and Mexico, suitable for medium elevations. Height 5—6 feet. *A. grandiflora* bears pure white flowers. *A. chinensis*, pink, and *A. rupestris* pinkish white. *A. grandiflora* is suitable for the mixed border. Propagated by seed or cuttings.

Abrus.*Leguminosae.*

A. precatorius is an indigenous climber which bears bright red seeds tipped with black which are very ornamental and used as weights by the Indian goldsmiths. Not of any particular merit except for the beads in 'Seed and Bead Work'. There is a variety with ivory white seeds. Easily propagated by seed.

Abutilon.*Malvaceae.*

A class of ornamental shrubs, chiefly from tropical America, 4—6 feet, some having variegated leaves, but largely prized for their "Lantern flowers" which are very pretty. *A. vexillarium* bears yellow, drooping, balloon-shaped flowers. *A. Thompsonii* has variegated foliage. Propagated easily by cuttings or seed. Not a very free bloomer on the plains. It is best to discard old woody plants and raise fresh young ones from cuttings every year.

Acacia.*Leguminosae.*

A large genus of much prized ornamental flowering shrubs and trees of moderate height, popularly known as the "Wattles". The majority of the ornamental kinds are natives of Australia. They succeed well at hill stations of moderate elevation. *A. dealbata* is the Silver Wattle or Mimosa tree which bears very fragrant yellow blossoms usually twice a year, once in

the spring and again in the autumn. Its habit of sending up suckers from roots is rather a disadvantage. *A. longifolia* is the Golden Wattle, also of Australian origin, and very handsome in bloom; *A. pycnantha* is another desirable species bearing dense masses of yellow flowers. *A. decurrens* and *A. auriculaeformis* are also much esteemed for their ornamental foliage and fragrant flowers. *A. Farnesiana* which is grown commercially for its perfume yielding flowers is well suited to the higher elevations. All are easily propagated by seed or by cuttings. The latter under glass with bottom heat on the plains. Grown as tub-plants, in bush form, or as standards, Acacias are very useful for 'forcing' in the spring, and yield splendid results.

Acalypha.

Euphorbiaceae.

A class of familiar shrubs of medium height, ranging from 3—8 feet, extensively used for the border or for screen planting, and valued chiefly for their ornamental foliage of rich tints and bright variegation.

A. tricolor, perhaps the most showy of the class, has leaves blotched with red and crimson on coppery green ground, which produce an excellent mass effect. *A. Godseffiana* which is of a somewhat dwarf habit (3—4 feet) has leaves with white or cream colour margins. *A. illustris* is another important member

of this class with leaves of copper and crimson, and grows to a height of 8 feet. *A. triumphans* has large green leaves blotched with crimson.. Height 5—8 ft. *A. Sanderiana* is of a different character. Its foliage has no particular merit, but the flowers are borne in long tassels or catkins of a bright crimson colour. The names of the numerous species and varieties have a multitude of synonyms and the trade names are very confusing. In ordering plants therefore it is best to be guided by the description given in the catalogue of the nursery from which they are obtained. Acalyphas are by no means exacting in their requirements. Cuttings 6—8 inches long put down close in a nursery bed in the ground in the rains root very freely. For mass plantings, longer and woody cuttings are preferred as these carry a larger number of dormant buds, from which strong side-shoots are obtained in a shorter time. For single specimens or pot plants, terminal cuttings of young wood alone are satisfactory, These are rooted in sand. Border plants can be sheared and kept down to any desired height from 3 to 8 feet.

Acanthus.

Acanthaceae.

A. ilicifolius is a pretty shrub with sky blue flowers like the blue Iris and leaves like those of Holly. Thrives well at medium elevations. Requires plenty

of water at the roots. Height about 3 ft. Plants are easily raised from seed or by division. *A. mollis* is another showy species but needs a cool climate. On the plains, the plant grows but seldom flowers.

Achimenes.

Gesneraceae.

Very showy herbaceous perennial flowering plants, chiefly natives of Mexico and Guatemala. Easily cultivated even at low elevations. The colours cover a wide range of shades of purple, mauve, and pale blue. There are also pure crimson and white varieties. *A. grandiflora* is the most widely cultivated in this class. The mauve and purple varieties succeed best on the plains. Height 9—15 inches. They are not quite well suited for planting out in the open beds as the flowers are spoiled too soon by exposure to sun and rain but as pot plants and on rockeries they produce splendid results. The compost should be rich in leaf mould. The plants should be continually retarded by pinching out the tips so as to produce a dense bushy growth until they attain the required size for blooming. In 10 in. pots which are a suitable size, they make a spread of about 15 inches in diameter. The side shoots along the margin of the pots should be given inconspicuous wire supports to prevent them from becoming straggly. When the pinching out is stopped,

all the flower buds open out almost simultaneously and produce a gorgeous effect. Propagation is done by means of tubers which are scaly and brittle. They may be preserved year after year. They increase in quantity each year. New varieties may be raised from imported seed which is very minute and should be sown as described on page 62 (Fig. 15). When the material is limited in quantity at the start, it may be increased indefinitely by putting down in sand the tips of shoots which are removed in order to induce bushy growth. Even a single pair of leaves with one joint is sufficient for the purpose. These plants are not so vigorous as those raised from tubers, but produce flowers all the same, and provide an abundance of tubers for the next season. When the plants have finished flowering, water should be gradually withheld, and when the tops die down, the pots should be tilted on the side and left in that condition for a couple of weeks. When the soil in the pots is almost dry, the pots can either be stored away in a clean and dry place in an outhouse where there is plenty of room for the purpose, or preferably, the tubers may be removed from the pots, and stored in a box completely covered with dry sand. In storage they should have no further access to moisture until they start into growth again the next season.

They should then be potted up. Water at first should be given sparingly until the first leaves develop to their normal size. Liquid manure should be plentifully used when the flowers are forming. Their normal season of growth is the summer in places where there is plenty of rain. In Madras and other places served by the north-east monsoon they are best started in September—October. In ordering from out-stations, it is far more convenient to order tubers instead of plants. The order in such cases should be sent at least a month in advance of the seasonal rains. There are several species and numerous varieties under distinctive trade names: *A. longiflora major* bears large azure-blue flowers *A. longiflora alba* is a white-flowered variety of the last and equally beautiful. *Mauve Queen*, *Rosea*, *Elegans*, *Meteor*, *Magnifica*, *Scarlet Perfection*, etc. are some of the important horticultural varieties.

Achyranthes.

Amarantaceae.

A. aspera is a plant of considerable merit as a dwarf edging. It has bright red foliage and bears close trimming. The propagation is extremely easy. 3 ins. cuttings in sand strike root in less than 2 weeks.

Acroclinium.*Compositae.*

A. roseum is an easily cultivated annual of the class known as "Everlasting flowers". The colour ranges from white to pink and rose. Height about 1½ feet. Seeds should be sown in pans in October on the plains, and in March on the hills. May be planted out in the border.

Actiniopteris.*Polypodiaceae.*

A pretty little fern resembling a miniature Fan Palm. *A. flabellata* is indigenous to S. India and is found along water courses and in the crevices of rocks in the rainy season. It is especially abundant in the interior at elevations of 2,000 feet and above. Propagated usually by division.

Adam's Needle: see *Yucca*.

Adansonia.*Bombacaceae.*

A. digitata is the Baobab tree of tropical Africa famous for the enormous thickness (sometimes 30 ft. in diameter) to which its trunk grows. It is closely allied to the silk cotton tree common in S. India and can be successfully cultivated. It is also known as the monkey bread tree and is suited to large gardens. The trunk has a gouty appearance. The leaves are palmate and the flowers, 6 ins. across, are somewhat

like a Hibiscus. The pulp of the fruit is said to be eaten in Africa and its juice used as a *sherbet* (beverage). Its bark produces a strong fibre. Propagated by seed.

Adenanthera.

Leguminosae.

A. pavonina is the well-known *Bead tree* or red wood, a native of Malaya. Grows almost anywhere in S. India. Suitable as a handsome shade tree, and is a fairly quick grower. It is upright in habit and attains a considerable height. The bright and glossy red seeds of the shape of a double convex lens are used as weights by goldsmiths in this country and also for necklaces. Propagated easily by seed. *A. bicolor*, a native of Ceylon, is less common but bears more ornamental seeds which are half black and half red and somewhat smaller than the pure red.

Adenium.

Apocynaceae.

A. obesum is a dwarf flowering shrub distinctive in form and somewhat similar in habit to *Jatropha*. A slow growing native of Africa, it needs to be placed in the full sun all the year round. The plant is nearly deciduous. The flowers, which are borne terminally, more or less resemble *Plumeria rubra*. It thrives in a stiff soil of clay and debris mixed in equal quantities. Propagated by cuttings.

Adiantum: *See Ferns (Maidenhair).*

Aegle Marmelos.

Rutaceae.

Bengal Quince. This is a common tree of S. India, bearing what is known as the Bael fruit. It belongs to the orange family and is somewhat spiny and slow growing. A moderate sized tree, fairly ornamental, but is valued chiefly for its fruit. Propagated by seed in the rains.

Aerides: *See Orchids*

Aeschynanthus: *Syn. Trichosporum. Gesneraceae.*

Very desirable pot plants of Java and Sumatra, of a trailing habit, and suitable for the conservatory at the higher elevations from 3,000 feet upwards. *A. zeylanica* makes a scandent shrub-like growth to a height of about 2 feet, and bears orange yellow flowers. *A. Hildebrandii* is of a much dwarfer habit and produces red flowers tipped black. They need a light open soil, rich in leaf mould. May also be grown like orchids on a log of wood covered with peat and sphagnum and fastened with soft wire. On the plains they need protection in a conservatory and are very shy bloomers. Propagated by division, or cuttings in the rains.

Agapanthus.*Liliaceae.*

A. umbellatus, otherwise known as the "Blue African Lily" is a plant of great merit and thrives easily at medium to high elevations, producing large heads of bright blue flowers which remain fresh for a long time. It grows well as a tub plant rested in the winter by watering very sparingly. Should be fed with manure water during the growing season. There is also a white-flowered variety. On the plains both varieties grow but seldom come into bloom except when rested bulbs used for forcing are imported in the winter in which case they flower the first season. They require a light rich soil and partial shade.

Agave.*Amaryllidaceae.*

The Agaves are stately foliage plants, about 6 feet high, chief among which is *A. Americana* popularly known as the century plant or the giant American *aloe*, although correctly speaking it is not an *aloe*. It is very graceful and symmetrical in its habit and effective as a centre plant in a mass of ornamental foliage of dwarfer habit, or may be planted singly on a lawn. It is a succulent with sharp-pointed spiny leaves which in a variegated form are creamy white, striped with green. Needs effective drainage at the roots. Does well on an open cactus mound. As a pot plant it must be watered

sparingly, and the soil should be mixed with an equal quantity of *debris*. Propagated by suckers taken with some roots on. There are several other species which are of interest chiefly as fibre plants or as a boundary hedge against trespass. *A. densiflora*, *A. striata*, *A. cantula*, *variegata*, etc., ought to find a place in every large garden.

Ageratum.

Compositae.

A genus of fairly popular annuals, which are usually about 1½ feet high, producing bright heads of pale blue flowers. *A. mexicanum* has been remarkably improved by breeding in recent years and very dwarf forms and some producing red (strictly pinkish blue) flowers are now offered by seedsmen under special trade names. There are also white-flowered forms. Easily raised either from seed or from cuttings which root readily in sand. On the plains they thrive best in the cold season. Sow in August to October, on the hills in March. Plant only one in a pot as they spread considerably.

Aglaonema.

Araceae.

A. costatum, a dwarf form, and perhaps the most showy of this genus and several other species, chiefly natives of the Philippines and Malaya are useful

foliage plants. The leaves are blotched or variegated. Easily cultivated; propagated by cuttings which root freely. The soil should be light and rich, and mixed with some crushed charcoal. *A. nobilis*, *A. pictum*, *A. simplex* are other important species.

Agrostemma.

Caryophyllaceae.

A. coeli-rosa is the Rose of Heaven. An annual which bears in great profusion beautiful rose and white flowers. Suitable only for the hill stations. Raised from seed.

Ailanthus.

Simarubaceae.

A. excelsa, or the Chinese "Tree of Heaven", is a very handsome and quick-growing tree suitable for medium elevations. *A. glandulosa* is also equally attractive. Propagated by fresh seed, or root cuttings or root suckers.

Albizzia.

Leguminosae.

A genus of ornamental shade trees bearing sweet-scented flowers. *A. Lebbek* is the *Siris* tree of classical fame in this country. *A. odoratissima*, *A. procera* are other desirable species. They are also used for shade on tea and coffee plantations and the timber is also fairly valuable. They grow well from seed in any garden soil.

Alexandrian laurel: *see Calophyllum.*

Allamanda.

Apocynaceae.

An important genus of showy, scandent shrubs and climbers, chiefly from Brazil, which are easily cultivated. *A. grandiflora* is a gorgeous climber with its bright glossy green foliage and constant profusion of large, deep yellow flowers. It is very vigorous, and trained on an arch or trellis, it grows to a height of 30 feet or more. *A. violacea* is a distinctive shrub with its terminal clusters of bright reddish purple flowers. *A. neriiifolia*, *A. Hendersonii*, etc., are also commonly grown. Allamandas thrive in any good garden soil. Propagated easily by cuttings in the rains.

Alocasia.

Araceae.

A large genus of gorgeous foliage plants, closely allied to Caladiums and Colocasias, many of which are also cultivated for the edible tubers which they produce. They grow well in a light soil containing leaf mould, sand and loam each 1 part and crushed debris 2 parts. They require plenty of water in the growing season. Very effective as pot plants for the verandah, or conservatory, or when massed together around the trunk of large shade trees. There are many species of which the following are

important: *A. macrorhiza variegata* bears large cordate leaves blotched with white. Height about 5 feet. *A. Sanderiana* is a very attractive conservatory plant, much dwarfer than the preceding, with deep glossly green leaves with metallic tints contrasting well with its white margins, midrib and veins. *A. violacea* is also a comparatively dwarf form, rich in its metallic hues and somewhat sub-tropical in its requirements. *A. cuprea* has dark metallic green leaves with darker rib and veins and the underside rich purple. *A. argyrea* is also a desirable species notable for its large dark green leaves with a silvery sheen. There are also numerous other species and varieties which are attractive. Propagated by tubers or offsets.

Aloe.

Liliaceæ

A genus of foliage plants closely resembling the Agaves and requiring the same treatment. They are useful and attractive on a rockery on which Cactus, Yucca, Agave, and other foliage plants are grown. There are numerous species and hybrids. *A. serrulata*, and *A. mitraeformis* are distinctive. Propagated by suckers well dried off.

Aloe, American: *see Agave.*

Alonsoa.*Scrophulariaceae.*

A. Warscewiczii is a species of bright annuals composed of several varieties, usually about 18" high and bearing showy flowers of orange, red, etc. Suitable for the hills and also medium elevations. Propagated by seed.

Aloysia: *see Lippia.*

Alpinia.*Zingiberaceae.*

A genus of hardy foliage plants which can stand a great deal of neglect. They are nevertheless very attractive and much used for mass effect. Very suitable for low and swampy corners where they rapidly spread over a large area. *A. nutans*, *A. Raflesiana* and *A. Sanderac* are desirable species. The two last named have striking variegated foliage, green and white. Height about 6 feet. The flowers, borne in racemes or panicles, are also attractive. Propagated by division.

Alstroemeria.*Amaryllidaceae.*

South American tuberous plants suitable for the hills. They require a shaded position and plenty of water at the roots. Height about 3 feet. Propagated by division of the roots, also from seed. *A. Pelagrina*, *A. chilensis*, *A. violacea* are important; flowers lilac, rose-red, white, etc.

Alternanthera.*Amarantaceae.*

A genus of very dwarf edging plants extensively used for lettering in parks and public gardens, and also for design work, and for ribbon effect. The variegation of leaves is a fine blend of green and gold or green and red. Cuttings root readily even in the open sun with a little protection during midday for two or three days. *A. versicolor*, *A. tricolor*, *A. amabile* and *A. spathulata* are some of the important species.

Althea rosea.*Malvaceae.*

The popular Hollyhocks, tall, stately plants bearing large, showy flowers of various colours, are easily raised from seed even on the plains. The double varieties thrive only at the higher elevations. Hollyhocks require a lot of root room and are therefore more suited for the open border than for pot culture. The seed pods formed by the earlier flowers should be promptly removed for a succession of bloom, and the plants fed with liquid manure. The seed is usually sown where the plants are intended to remain, as transplanting sometimes causes a severe check to their rapid growth. Hollyhocks are biennials, but are best treated as annuals in this climate.

Alyssum.*Cruciferae.*

A. maritimum, commonly known as Sweet Alyssum is a very dwarf sweet-scented annual, bearing white or lilac flowers. A very desirable plant but succeeds well only at medium to high elevations.

Amarantus.*Amarantaceae.*

The *Amarantus* are a fairly large genus of annuals allied to the cockscomb. Much cultivated for their dazzling foliage and striking habit. They thrive almost everywhere and become almost self-sown after a time in any good garden soil. *A. tricolor* is one of the most showy with its top leaves a deep crimson and yellow. Height about 5 feet. There are also dwarf horticultural varieties hardly a foot high. *A. caudatus*, otherwise called "Love-lies-bleeding", is a weeping form which grows to 3—5 feet. *A. salicifolius* is a very narrow leaved, dwarf form, similar in brightness to *A. tricolor*. Propagated by seed; grows almost at any time of the year, but chiefly in the rainy and the cold seasons.

Amaryllis.*Amaryllidaceae.*

An important genus of showy bulbous plants many of which can be grown successfully on the plains. The term *Amaryllis* is also popularly applied to

several other bulbous plants of similar habit, such as *Hippeastrums*, *Zephyranthes*, etc. The flowers are large, bright coloured, and well-displayed on scapes about 1—1½ feet high. Like most other bulbous plants, the *Amaryllis* bulbs must be rested for at least three months after they have finished their leaf growth during the summer and the leaves show signs of yellowing. If in pots they may be lifted and stored dry like onions in a cellar. Early in the spring they should be potted up hard in good rich soil. 6" pots are a suitable size. They are then left in a somewhat dark place and watered thoroughly but occasionally. When the flower-scapes come up, the pots are brought into the open and watered more copiously, and fed with liquid manure. The flowers remain in form for several weeks. It is important that after the plants have finished flowering they should be grown on until late in the autumn in order to mature the bulb for the next flowering. Transplanting in active growing condition is somewhat difficult, as the abundant succulent roots are apt to decay in new soil when disturbed. The leaves which are strap-shaped usually grow after the flowering is over. There is a wide range of colours, white, cream, rose, crimson, scarlet and intermediate shades. *A. Belladonna* is the Belladonna Lily with fragrant rose-red flowers. *A. purpurea*, *A. pallida*,

A. rosea, are important. There are numerous hybrids with trade names.

Amherstia.

Leguminosae.

A. nobilis is rightly described as the "Queen" of flowering trees. Closely allied to *Brownea* and *Saraca* (Asoka). This medium sized tree of Burma is one of the most beautiful in the world. Bears large, bright, red flowers with wide spreading petals, the upper ones tipped with yellow, and petal-like bracts in long drooping racemes. The foliage is also very attractive. The tree thrives at low to medium elevations where there is plenty of rainfall, but not in places very near the sea. Propagation is by seed; but owing to the difficulty of obtaining seed, layering is more frequently resorted to.

Amomum.

Zingiberaceae.

Handsome foliage plants, allied to *Alpinia* and having the same requirements as to soil and culture, namely shade and moisture. *A. hemisphaericum* and *A. magnificum* are important. Height about 10 feet. Propagated by division.

Amorphophallus.

Araceae.

Giant aroids, allied to Arums, which are of interest chiefly as curiosities, because of their huge

flower spathes. The club-shaped scapes and also the stems have curious markings resembling a snake. The flowers emit a very strong foetid odour. Propagated by tubers or offsets. *A. campanulatus* and *A. Titanum* are two important species among numerous others.

Anagallis.

Primulaceae.

The well-known '*pimpernels*' of the temperate climate are suitable for the hill stations. *A. grandiflora* is blue flowered and grows to about 1 foot. There are also red, pink and white varieties.

Ananas.

Bromeliaceae.

A. sativus variegatus is a very attractive foliage plant of the pineapple family and also bears the much prized fruit. The leaves of the variegated variety are beautifully striped pink, white and green. Propagated by suckers which are rooted in sand like cuttings and potted up. Require an open soil. Suitable as house plants for which they are best restricted to small 5"—6" pots and re-potted with fresh soil in the same pot as before and shifted into the next larger size once in two years.

Andropogon.

Gramineae.

A. Schoenanthus is Lemon grass which is noted for the fine fragrance of its leaves. Of easy culture. *A.*

muricatus is the Kus-kus grass from the fragrant roots of which door *chicks* are made for the hot weather. Propagated by division.

Anemone.

Ranunculaceae.

Attractive and popular plants but suitable only for the hill stations. Some of the tuberous species can be grown successfully at medium elevations if the tubers are imported in the autumn and handled in the same way as tulips and hyacinths are cultivated. *A. coronaria* is the poppy-flowered Anemone; flowers red, white and blue, 1½—2 inches across. *A. fulgens* bears vivid scarlet flowers about 2 inches across. *A. hortensis* bears somewhat smaller flowers which are red or rosy purple. Started in October, they come into bloom usually by February. On the hills, the tubers should be started in March.

Angelonia.

Scrophulariaceae.

A genus of easily cultivated, free flowering and very attractive flowering shrubs of S. America, well suited for dwarf ornamental hedges or edgings and also for the border. Only the species known as *A. grandiflora* has been introduced into this part of the country. Height about 2 feet. Flowers bluish-purple, scented. There is also a white-flowered variety (*Alba*) which is equally attractive. The

flowers are borne on long, leafy, terminal racemes. Propagated by seed, and also easily by soft-wooded cuttings almost at any time of the year. Will thrive without care in any ordinary garden soil. Other important species which deserve to be introduced here are: *A. Gardneri*, 3 ft. flowers purple, white-centred, handsome; plant aromatic. *A. salicariæfolia*, 3 feet, flowers, deep blue, *A. angustifolia*, flowers deep violet.

Anthericum.

Liliaceae.

Plants of very neat and attractive habit, the variegated forms of which are suitable for edgings or borders at medium to high elevations. Also as basket plants. *A. liliastrum* bears large, white, fragrant, bell-shaped flowers. Increased by division.

Anthurium.

Araceae.

Foliage plants of great beauty and variety which thrive in the conservatories or under shade on the plains. There is also a flowering group which is better suited to medium elevations. In the foliage group, the plants have handsome velvety leaves, some of which have rich metallic tints like *Alocasias*, others striking crystal white bands or lighter coloured ribs and principal veins. The flowering group is remarkable for its bright spathes of various delicate shades of red, rose and white which are sometimes

very profusely borne and always well displayed amidst the striking foliage. In the cultivation of Anthuriums it is of the utmost importance that the soil should always be level with the growing point, and the plant should not be allowed to form a root stem above the soil, as the exposed roots harden and cease to sustain the plant. When the plant forms a stem above the soil it should be earthed up with additional compost. In some cases, as when the stem is above the rim of the pot, it is advisable to start the plant on fresh roots. Propagation is usually done by suckers or by cuttings of the rhizomes; also by seed (when the latter is obtainable). A light compost consisting chiefly of chopped up sphagnum with pieces of finely powdered brick, charcoal, a little sand and a sprinkling of the ordinary pot compost forms a very good medium for propagating Anthuriums. The material for propagation should be placed close to the edge of the pan. Seedlings should be picked off as soon as the first leaf is large enough to handle and potted up in small pots close to the edge. *A. crystallinum*, *A. Warocqueanum*, *A. splendidum* are commonly met with among the numerous species and varieties of the foliage group. *A. Veitchii* is one of the most desirable plants at medium elevations, but does not thrive easily on the plains. *A. Andraeanum* (spathe orange red), *A.*

Brownii (rose tinted), *A. Regnellianum* and *A. Scherzerianum* (intense red) and their numerous hybrids are among the most conspicuous in the flowering group. Anthuriums require a soil rich in leaf mould, plenty of moisture coupled with thorough drainage and partial shade.

Antigonon.

Polygonaceae.

One of the most extensively cultivated climbers in the climate of Madras. Once established it grows by itself and climbs to a great height if trained on trees of light foliage such as *Casuarina*. Suitable also for trellises, screens, pergolas, arbours, etc., and provides plenty of cut flowers at all times of the year. Propagated easily by cuttings or layers, also by seed which is often self-sown. *A. leptopus* bears a profusion of long racemes of bright pink flowers. A white-flowered variety of the same is termed *A. l-albiflora*, *A. insigne* bears much larger flowers which are double, and rose-pink.

Antirrhinum.

Scrophulariaceae.

A. majus, popularly known as the Snapdragons, are not quite so easily cultivated on the plains as at medium elevations, but are well worth the care they demand. If the seed is sown early in September—October in finely sifted soil, a fair percentage of germination is

obtainable, and these early seedlings held back by nipping the tops until the end of November (or December in the case of late sowings), so as to form a strong root growth, flower freely even on the plains. Seeds sown later than October, though they come up more readily and plentifully, produce plants which do not advance far enough before hot weather sets in. Height 1—3 feet.

Countless named varieties are listed in the seed catalogues, some very dwarf and effective as bushy pot plants. The flowers present a wide range of colour, in delicate shades of crimson, yellow, purple and white. On the plains, an excellent plan is to perpetuate varieties which have proved successful and free flowering in any year by means of cuttings in the same manner as select varieties of *Verbena*, *Petunia*, *Coleus*, etc., are propagated.

Aphelandra.

Acanthaceae.

Flowering shrubs closely allied to the *Justicias*, and requiring the same treatment. *A. fascinator* is a moderate-sized shrub (about 6 feet in height) which has handsome foliage and bears showy spikes of bright scarlet flowers. Should be watered moderately when the flowers appear. *A. nitens* is a more showy plant of dwarf habit but succeeds well only at medium eleva-

tions. Leaves glossy green, flowers scarlet. Propagated by seed or preferably by terminal cuttings of nearly mature wood.

Aquilegia.

Ranunculaceae.

A. vulgaris, the common Columbine, and many others of its class, although among the most beautiful of garden plants, can be grown in S. India only at hill stations. Propagated by seed or division.

Aralia.

Araliaceae.

A large genus of erect and graceful foliage plants of stately habit. The greater number of these are distinctly sub-tropical and are suitable only for the higher elevations. Popularly many of the beautiful foliage plants, the correct name of which is *Panax*, are known as *Aralias*, both being very closely allied in general habit and requiring the same mode of culture. *A. Balfourii* has handsome variegated foliage, with whitish blotches. *A. maculata* has purplish leaves with green spots. *A. filicifolia* is a tall and stately shrub with large leaves growing to a height of 8 feet. *A. elegantissima* and *A. Veitchii* require a cool climate. Propagated by cuttings, occasionally by seed.

Araucaria.

Pinaceae.

Magnificent foliage trees of S. America and Australia. When planted out they attain a tremendous

height and are great ornaments to the lawn. Seedlings are equally valuable as pot plants for the verandah or the drawing room. They have a perfect symmetry of form and the leaves are fresh and green at all times. They can be kept dwarf for many years if the root space is restricted and the plant re-potted in the same size of pot with fresh soil year after year. Araucarias are of easy culture and thrive in any good garden soil and with ordinary care even on the plains. As pot plants they are the better for a somewhat heavy soil in 6 ins. pots and potted up hard. Care should be taken not to spoil the symmetry of the foliage by placing the plants where light comes from only one side. As window plants they should be turned about a fourth of their axis every week, so that all the sides may grow uniformly. *A. excelsa*, *A. Cunninghamii* and *A. imbricata* thrive on the plains. *A. Bidwilli* and *A. Cookii* are suited to the higher altitudes. There are also several other species all equally desirable. Propagation is usually by imported seeds. The leading vertical shoots may be propagated by *gootee*, and when possible this method should be preferred, as seedlings grow very slowly. But side shoots should not be propagated as the plants thus raised retain their horizontal habit.

Arbor-vitae: *Thuja orientalis*.

Pinaceae.

Highly ornamental foliage plants (or trees) closely

resembling the cypresses. They thrive remarkably well even in the climate of Madras. In the ground they seldom attain the normal height to which they grow in a temperate climate, but remain very presentable. As pot plants they are equally effective. Propagated by fresh seed which has to be imported. It can be obtained also from Dehradun. The seed should be sown in the rainy season in pans of sand mixed with a little leaf mould. The seeds take a long time to germinate.

Archonto-phoenix: *see Palms.*

Arctotis.

Compositae.

A. grandis is a showy annual with large bluish white flowers displayed erect and well above the foliage. It is worth cultivating at medium to high elevations. Height 1½—2 feet; raised from seed.

Ardisia.

Myrsinaceae.

A. crenulata is a dwarf shrub much prized for its showy pendulous clusters of long lasting bright red berries, but is best suited to medium elevations. Propagated by layering, or *gootee*, or by cuttings with bottom heat. *A. solanacea* and *A. paniculata* are also attractive flowering shrubs, with rose-coloured and pale pink flowers respectively.

Areca: *see Palms.*

Argyreia.

Convolvulaceae.

Silver weed. Indigenous. Extensive ornamental climbers allied to the Ipomoeas, and their chief merit is their large silvery leaves. *A. speciosa* has light purple flowers and large cordate leaves, silvery underneath. Thrives in any ordinary soil. *A. cuneata* is perhaps the best of the group, as it is very dwarf and a profuse bloomer. Flowers deep purple. Propagated by seed or by cuttings (with bottom heat), or layering. *A. argentea* bears white flowers tinged with rose. *A. splendens* bears pale pink flowers.

Aristolochia.

Aristolochiaceae.

Pelican Flower. Ornamental, strong-growing climbers which rapidly cover an arbour or trellis; popularly known as the Dutchman's Pipe. *A. elegans*, as the name itself indicates, is very attractive, and free blooming; flowers about 3 ins. across which are purple and white blotched; also called calico flower. The unpleasant odour which is a characteristic of this genus is remarkably absent in *A. elegans*. *A. gigas* (var. *Sturtevantii*) syn. *A. grandiflora*, also known as Pelican flower, Swan flower, Goose flower, Duck flower, etc., bears very large flowers (with a long tail

about 18 inches) but these emit a strong foetid smell. *A. tricaudata* is a scandent shrub of Mexico, 4—5 feet high, which is fairly showy in bloom. The flowers are a maroon red outside and dark purple-brown inside; tail 4 ins. long. Propagated by seed, layering, or cuttings (with bottom heat).

Artabotrys.

Anonaceae.

Climbing ylang-ylang. *A. odoratissimus* is a woody climber or scandent shrub, belonging to the Custard-apple family, useful for screen planting in large gardens. Attractive glossy green foliage. Bears greenish yellow flowers which are very strong scented. Thrives in any ordinary soil. Propagated by seed or layering.

Artemisia.

Compositae.

Small shrubs, usually grown as pot plants in this climate and much prized for their fragrant leaves which are used in bouquets. *A. Abrotanum* and *A. latifolia* are two important species of which the former is the more desirable one. Propagated by cuttings.

Artocarpus.

Urticaceae.

A. incisa is the seedless Bread fruit tree which attains an enormous height and spread and is very ornamental as a foliage tree for shade. Thrives best on sandy soil in coastal places. Requires plenty of

water. Propagated by root cuttings or suckers placed in sand; also by layering. *A. integrifolia* is the jack fruit; also an ornamental shade tree with dense foliage and pyramidal habit. Propagated by seed.

Arum Lily: *see Richardia.*

Arundinaria.

Gramineae.

A. suberecta is a dwarf foliage shrub, allied to the bamboo. Height about 18 inches. Very elegant as a pot plant and of very easy culture. Propagated by division.

Arundo.

Gramineae.

A. Donax variegatum is a highly ornamental variegated grass or tall reed from New Zealand which grows to about 8 feet in dense clumps. *A. conspicua* is a dwarf species. Propagated by cuttings in the rains or by division. Requires a light sandy soil and a sunny situation.

Asclepias.

Asclepiadaceae.

Milk weed. Silk weed. *A. curassavica* is a fairly showy, perennial border shrub, about 4 feet high, which thrives with ordinary care and bears terminal clusters of orange red flowers. The plant is frequently attacked by a caterpillar which should be caught and des-

stroyed. As the plants grow old they become straggly and should be discarded and new ones started from cuttings.

Asparagus.

Liliaceae.

Very ornamental foliage plants which can also be trained as climbers. *A. plumosus* commonly known as the Asparagus fern is a very elegant pot plant with fine, dark green, feathery foliage. It can be treated either as a climber or as a shrub. *A. Sprengeri* is commonly of trailing habit and is most effective in large pans or hanging baskets. Both are very useful for decoration indoors along with cut flowers for vases. Propagated easily by division, or seeds. *A. plumosus* usually produces seed only when planted in the ground and allowed to climb on a trellis for 10 feet or more. The seeds are hard and germinate slowly. The seedlings are as a rule more satisfactory than plants obtained by dividing the clumps. *A. myriocladus* is a dwarf plant, about 18 inches, with short leaves in numerous brush like whorls. *A. racemosus* is a scandent shrub which bears tiny white flowers which are fragrant.

Asperula.

Rubiaceae.

A. azurea (syn. *A. orientalis*) is a dwarf annual (Height 1 foot) closely allied to the sweet woodruff,

which bears small abundant blue flowers. It requires a cool climate and a shady, moist situation. Suitable only for the hills. Propagated by seed.

Aspidistra.

Liliaceae.

A foliage plant of considerable merit, especially as it stands much hard usage, dust, heat and even smoke. It is therefore very popular as a house plant. The foliage is useful along with cut flowers, and remains fresh for a long time. *A. lurida* (of which there is also a variegated variety) is the species commonly cultivated. Thrives in half shade, and in a moist situation. Propagated by division.

Asplenium.

Polypodiaceae.

A very extensive genus of Ferns, including *A. nidus avis* or the well-known Bird's-nest Fern, which is magnificent with its great big fronds, each about 4 feet long, of a beautiful pale green, with prominent ribs of a deep chocolate colour. Easily propagated at the beginning of the rainy season by means of spores which are produced in abundance. Like most other ferns, it requires partial shade, and grows to perfection as a tub plant under the fringe of large shade trees.

Aster.*Compositae.*

Asters are plants of exceptional merit. The perennial species and varieties, *A. Amellus*, are known as Michaelmas Daisies. They thrive with ordinary care in the open border and also as pot plants, and send up long stalks of numerous flowers. The white flowered variety succeeds best on the plains and is a most showy plant when in bloom throughout the rainy and the cold seasons. There are also varieties with mauve and purplish pink flowers which are equally showy and thrive in almost any soil and climate, but are less profuse in their bloom. Propagation is by suckers. As soon as the flowers fade, the stalk should be cut to the base and a little top dressing given. This will cause numerous strong suckers to be thrown up on every side. These should be separated and potted up singly in rich compost. In the open border, they require a deep, rich soil and a sunny situation.

The annual sorts which are called China Asters (*Callistephus chinensis*) consist of countless named varieties differing widely in height, as well as the shape, size and colour of bloom. The seedsmen divide these into groups known as German, Victoria, Quilled, Comet, Crown, Mignon, etc., tall and

dwarf, upright, branching and spreading, early and late, single and double, and in various shades of purple, lilac, blue, red, rose, white, etc. Raised easily from seed sown on the plains about the middle of September, and again in October for a succession of bloom. The annual asters are equally useful both for cut flowers and as bedding plants. The Comet type is one of the best. The tall spreading varieties should be given light inconspicuous stakes.

Asystasia.

Acanthaceae.

Medium sized perennial shrubs bearing in profusion, white, blue or purple flowers in terminal clusters. Require same treatment as *Justicia* and *Crossandra*. *A. formosa* bears large, handsome, tubular, red flowers. Requires partial shade. *A. africana* bears pretty white flowers almost all the year round. Propagated by cuttings of nearly mature wood.

Australian Daisy: *see Vittadinia.*

Azadirachta.

Meliaceae.

A. indica is the well-known *Nim* or *Neem* tree, also called *Margosa*, and grows in almost any poor soil, provided it is not overwet. A graceful and popular tree, the leaves and the oil from the seeds of which are credited with valuable medicinal properties.

The flowers are sweet scented. A very desirable shade tree, propagated by seed, often self-sown. Does not thrive easily in the wet districts of the West Coast but can stand a great deal of heat and drought.

Azalea.

Ericaceae.

Small shrubs of great merit, suitable for the hill stations. *A. indica* is among the best, and flowers in great profusion. Propagated by layers.

Balsam: *Impatiens Balsamina.*

Balsaminaceae.

Showy annuals of the easiest culture. They present a wide range of colour, red, white and purple in various shades. Seeds may be sown from September onwards until January in pans or one in each nursery pot (4 inches) with only 1 in. of soil at the bottom and covered with $\frac{1}{2}$ inch of soil. As the seedlings grow, more soil should be added about $\frac{1}{2}$ inch at a time until it nearly reaches the rim. In this way, the plants produce a strong root system and may then be shifted into 6 in. pots or they may be bedded out preferably in a row. The first buds which appear before the plants are well established should be removed. Balsams need a rich compost, plenty of water and a sunny situation. If the soil is poor, or the seed inferior, the flowers produced are single and unattractive. The full

double forms are known as the Camellia-flowered. Height usually about 1—1½ feet.

Balsam perennial: *see Impatiens.*

Bamboo: (*Bambusa*).

Gramineae.

Important foliage plants, some of them highly ornamental and should find a place in every moderate sized garden. The taller and thorny varieties are generally used for barriers along the boundary line. For ornamental purposes, the dwarf and medium sized bamboos are suitable and they are displayed to the best advantage when they are planted along the edge of a pond or stream. Some of the very dwarf Japanese varieties may also be grown in large pots or tubs. They require a rich porous soil and plenty of water in the growing season. Propagation is by division of the clumps, just as they start into seasonal growth when the rains commence. *B. aurea* (syn. *Phyllostachys aurea*) has yellowish stems, often brilliant in colour, light foliage. This is a very ornamental Japanese bamboo. Height 10—15 feet. *B. vulgaris* is the “Golden bamboo” with bright bands or streaks of gold and green on the stems which are hollow; grows to a considerable height (40 feet). *B. nigra* or the black bamboo is another distinctive species which grows

to about 25 feet. *B. nana* is a dwarf Chinese species (6—8 feet) suitable for hedges.

Baobab: *see Adansonia.*

Barleria.

Acanthaceae.

Bushy flowering shrubs of moderate height (3—6 feet) and of great beauty when they are loaded with bloom usually from December to February. Suitable for the mixed border, rather than as single plants. Their one demerit is that the dry bracts of the flowers remain on the plant long after the flowers have faded. *B. cristata rosea* is rose pink. *B. c-alba* is white, *B. strigosa*, pale blue, *B. Gibsonii*, bright azure-blue flowers much larger than those of other species. Easily propagated by seed or cuttings in the rainy season.

Barringtonia.

Myrtaceae.

Attractive shade trees with handsome foliage and rose coloured flowers. *B. speciosa* grows to a great height and thrives in any garden soil without any special care. *B. racemosa* is another desirable species very showy in bloom with its long drooping racemes pinkish flowers. Propagated by seed and cuttings.

Bauhinia: (*Mountain Ebony*). *Leguminosae.*

Handsome, free flowering tropical shrubs and trees of easy culture. Thrive everywhere in S. India. The flowers are large, 2 to 3 inches across, ranging from white to purple, purplish red, red and yellow. *E. purpurea* is a good-sized tree bearing large fragrant pinkish purple flowers. *B. variegata*, also a tree, bearing racemes of large magenta and white flowers. *B. tomentosa* is a dwarf tree, flowers yellow with red blotch. *B. candida* is a medium-sized tree which bears in great abundance large, white, sweet scented flowers. There is a variety with pink flowers also fragrant. *B. candicans* is a scandent shrub (4—6 feet) bearing large pure white flowers. *B. acuminata* is a handsome white flowered shrub. *B. Galpinii* is perhaps the most distinctive of the shrub varieties, bearing large clusters of brick red flowers. But its habit is straggly. It should be grafted on *B. variegata* or *B. candida*. *B. Vahlia* is a giant climber with leaves a foot across. *B. corymbosa*, is also a climber, but of moderate growth. Propagated by seed, layering, or cuttings with bottom heat.

Beaumontia: *Apocynaceae.*

B. grandiflora is a vigorous and extensive twiner, producing large terminal clusters of pure white, bell

shaped, fragrant flowers each about 3 ins. across; of easy culture. Suitable for a trellis or arch in a sunny place. Should be severely pruned after the flowering is over for the season, as the flowers for the next season are borne on the growth of the current season. Propagated by layering.

Begonia.

Begoniaceae.

A most charming genus of pot plants, consisting of numerous species many of which grow well on the plains. Begonias are remarkable for their constant profusion of bloom almost throughout the cold season. Those of the Rex group valued chiefly for its ornamental foliage, are equally attractive. The flowering group should be subdivided into the fibrous-rooted, semi-fibrous-rooted, and the tuberous-rooted kinds. Among the fibrous-rooted, the species known as *B. semper-florens* is best suited for the lower elevations. These grow to a height of 1—1½ feet, form dense bushy growth and flower freely. The flowers range from white to red and salmon and all intermediate shades. 3 to 4 ins. terminal cuttings put down in sand strike root in about 2 weeks. These should be potted up in 4 ins. pots and shifted into pots 2 ins. larger each time up to 10 ins. The soil should be a rich compost to which a little bone meal and charcoal dust

should be added. When they have attained a good spread, they should be fed with liquid manure once a week. The seed capsules should be removed before they begin to dry. From November to the end of February the shrub Begonias should be exposed to the full sun and kept in a semi-shaded place during the rest of the year. The red flowered varieties are difficult to save through the hot weather. But fresh rooted cuttings—propagated late in February and March—are less liable to succumb to the heat. In the summer their vegetative growth is practically at standstill and water should be given sparingly. When the roots decay, the leaves turn pale. All possible cuttings should be taken from such plants immediately and rooted in sand. A good portion of these will damp off, but those that remain will furnish the stock for the next season. From September onwards the plants as well as cuttings are all safe. The varieties known as Faery Queen, Salmon King, Flame of Love, Firefly, Purity, Innocence, etc., are the trade names of choice strains offered by European seedsmen.

Several of the tall shrub varieties are also very showy and require the same treatment as the *semper-florens* class. But unlike the latter, they require to

be grown on for two or three years in succession to make large specimen plants of good spread and height. They send up suckers like bamboo shoots from the base. The shoots that have finished flowering should be removed shortly afterwards. These provide cuttings for propagation. Terminal cuttings about 6 ins. long are the best. The plants require shifting into fresh soil every month in the growing season from September to February. A well-grown plant started from a cutting will appropriately go into an 18 ins. pot the third year. If the shoots show signs of decay in the summer the plants should be re-potted into smaller pots and lighter soil for the time being. The varieties known as *President Carnot* and *B. coccinea* are perhaps the most showy among the kinds suitable for the plains. Height about 6 to 8 feet or more. A hybrid known as *B. coccinea* var. *gigantea rosea* is a most charming and floriferous plant. Height about 2 feet. Other notable members of this group are *B. fuchsioides*, *B. Haageana*, *B. Ingramii*, *B. manicata*, *B. maculata*, *B. weltoniensis*, *B. argenteo-guttata*, etc., which should be preferably obtained from the hill stations every year in September.

The Rex group are usually not quite satisfactory on the plains but respond to good care in their culti-

vation. Leaves nearly mature should be obtained from the hills about the middle of October and propagated in the manner described on page 74 (Fig. 21). Towards the end of the cold season, the plants may be planted on a rockery under the shade for the summer and lifted and potted up again in October.

The tuberous-rooted Begonias as a rule do not thrive on the plains, but some of the hardy, orange flowered, single kinds do come into bloom, if fresh tubers are imported in September and started in a mixture of leafmould and sand.

Nearly all the varieties of Begonias (except a few of the hybrids which are sterile) can be raised from seed as described on page 62.

Bellis.

Compositae.

B. pcrennis is the True or English Daisy. On the plains, the plant can be grown as a cold season annual from seed sown in October, but thrives indifferently and is a shy bloomer. At medium elevations the seedlings will survive the summer and flower more freely the second year. They required frequent shifting into fresh soil.

Beloperone.*Acanthaceae.*

B. oblongata is a flowering shrub (4—5 feet) allied to the *Justicia* and requires the same treatment. Flowers purplish-rose. *B. chrysophloca* is an attractive foliage plant with leaves marked a golden yellow; flowers purple. Requires partial shade. Propagated by cuttings or layers.

Berberis.*Berberidaceae.*

B. aristata and several other species are popular and ornamental shrubs extensively used for hedges. Noted for their bright red berries. Suitable only for medium to high elevations. Propagated by cuttings or seed.

Bertolonia.*Melastomaceae.*

B. marmorata is a most charming pot plant, dwarf and variegated leaved, suitable for conservatories at the hill stations. On the plains it does well as a seasonal plant during the cold season on a rockery in partial shade.

Bignonia.*Bignoniaceae.*

A large genus of showy flowering climbers most of which thrive splendidly on the plains. They are free flowering and rapid growers and succeed in ordinary garden soil. *B. venusta*, with its dense clusters of orange-red, tubular flowers, is one of the most gor-

geous climbers in bloom. *B. magnifica* bears large panicles of flowers (each 3 ins. across) mauve to purple red in colour. *B. grandiflora* (syn. *Unguis-cati*) is a vigorous, woody climber bearing large bright yellow Allamanda-like flowers. *B. gracilis* is a yellow flowered, extensive climber which can spread vertically over smooth walls by means of small hooked tendrils. Propagated by cuttings in the rains and by layering. *B. Megapota mica* is a highly ornamental tree from Brazil, with graceful foliage, and light purple flowers. Propagated by seed.

Billbergia.

Bromeliaceae.

Flowering epiphytal plants of tropical S. America with ornamental foliage, and similar in habit to pineapple plants but can be grown like orchids on tree trunks or in well drained pots with a porous soil, consisting of cocoanut fibre, brick powder, charcoal and a sprinkling of pot compost. They are also very attractive as house plants. The flowers are in a spike, and usually of a dazzling brightness. *B. rosea*, *B. sanderiana*, (the flowers green tipped with blue), *B. thyrsoides* (flowers scarlet tipped with purple) and *B. vexillaria* (flowers purple with red bracts) are all very showy in bloom and easily cultivated. Propagated by suckers.

Bird of paradise flower: see *Strelitzia*.

Blanket flower: see *Gaillardia*.

Blue Gum Tree: see *Eucalyptus*.

Bocconia.

Papaveraceae.

B. frutescens is an ornamental, bushy plant, 8—12 feet, bearing small creamy white flowers in large terminal panicles. Suitable for the higher elevations. Propagated by seed or cuttings.

Bolusanthus.

Leguminosae.

B. speciosus is a beautiful Rhodesian tree with dark glossy green leaves, and deep blue, sweet-scented flowers, in drooping racemes. Suitable for medium elevations and slow growing. Propagated by seed.

Bombax.

Bombacaceae.

The Silk Cotton tree: Tall, rapid growing ornamental trees. *B. malabaricum* is commonly met with almost everywhere in S. India. Thrives even in poor sandy soil. Easily raised from seed.

Boucerosia.

Asclepiadaceae.

B. umbellata is a dwarf succulent leafless plant with angular stems resembling a cactus, and of very striking appearance when it bears its large umbels of purplish-brown flowers. A very desirable plant on a rockery fully exposed to the sun. Requires the same

treatment as Cactus. *B. crenulata* is another important species with very slender stems, and flowers similar to the last.

Bougainvillea.

Nyctaginaceae.

One of the most gorgeous and free flowering climbers of tropical S. America. The flowers themselves are not conspicuous but they are inclosed in large bracts which are a dazzling magenta-purple or red. Trained against large and spacious walls or against the columns of a porch, Bougainvilleas are among the most decorative of tropical plants and remain in bloom through the greater part of the year. *B. spectabilis* bears large panicles of deep rose. *B. lateritia* has large brick red bracts. *B. sandariana* is the species which is the commercial pot plant of western green houses. *B. Cypheri* is a larger flowering species and forms one of the most showy of this genus. Some of the recent hybrids known as Mrs. Fraser and the Maharaja of Mysore are also of great merit. The most recent introductions are the horticultural varieties known as "*Scarlet Queen*" and "*Mrs. Butt*" both of which are almost beyond description in their splendour of bloom. All these are easily propagated by cuttings or by layering and thrive in any ordinary garden soil.

Bougainvilleas make also excellent seasonal plants for the Christmas. For this purpose the plants started from cuttings should be cut back severely and trained to a symmetrical, compact and bushy growth and restricted to 10 in. pots when finally shifted for flowering. They should be grown on for two years to establish a strong root system and then starved for two months by withholding water and giving just enough to prevent the roots from drying up. About two weeks after the leaves are all shed, the plants should be watered freely again. The new growth will be nothing but flower-buds and the little 10 in. pot will be literally one mass of bloom.

Bouvardia.

Rubiaceae.

These well-known florists' plants (mostly natives of Mexico) which are cultivated under glass in a temperate climate do well only at elevations above 4,000 feet, but need protection in the winter at hill stations which are subject to heavy frosts. *B. Humboldtii corymbiflora* is an extremely elegant species, bearing fragrant white flowers in great profusion. *B. flava* is yellow-flowered and *B. triphylla* bears red flowers. There are also numerous hybrids. Bouvardias need a somewhat heavy rich soil. Propagated by cuttings with bottom heat.

Brachycome.*Compositae.*

B. iberidifolia (Swan River Daisy) is a very dwarf annual from Australia with finely divided foliage and pretty star-like blue, rose or white flowers. On the plains it is rather difficult to transplant the seedlings of these. Seeds are sown in open beds or pots where the plants are required to bloom. In places served by the N.E. monsoon, the sowing is done after the brunt of the rains is over.

Bridal Creeper: see Porana.

Browallia.*Solanaceae.*

B. clata is a pretty free-flowering annual bearing tiny deep blue or white flowers; easily raised from seed. The tips must be constantly pinched out to make bushy growth. *B. speciosa major* bears much larger and deep violet-purple flowers and is more popular. It can be grown either from seed or preferably from cuttings. The plants thrive with ordinary care in the cold season and flower freely. In the summer a sure means of saving stock for the next season is to put down cuttings in sand late in March and pot them up when they are thoroughly rooted.

Brownea.*Leguminosae.*

One of the most ornamental of garden trees of tropical America and as remarkable for its handsome foliage as for its large clusters of dazzling red flowers. *B. coccinea* is of a somewhat dwarf spreading habit. *B. grandiceps* is much larger and more handsome species. *B. Crawfordii* is a hybrid with salmon pink flowers in very large clusters. Propagated usually by seed, sometimes by layering.

Brunfelsia: (also *Brunsfelsia*).*Solanaceae.*

A very showy border shrub from tropical America; of medium height and pendulous habit, bearing in great profusion, pure white and sweet-scented flowers changing to yellow and somewhat resembling *Achimenes* in shape and size. *B. americana* is perhaps the most showy of the several species. *Franciscea bicolor*, a closely allied plant with purple flowers is often called *B. Hopeana* and is a plant of equally great merit. Propagated by layers or by cuttings in a nursery bed in the rains. Of easy culture.

Buddleia.*Loganiaceae.*

Attractive border shrubs, somewhat scandent, bearing large terminal panicles of small but showy lilac, white, violet or yellow flowers, some of which

are also sweet-scented. The leaves of some are silvery underneath. Buddleias are shy bloomers on the plains. Thrive well at medium elevations. Propagated by layers or cuttings in the rains. *B. madagascariensis* is perhaps more tropical in habit than the numerous other species.

Butea.

Leguminosae.

B. frondosa is a forest tree of India, sometimes planted in large gardens because it is gorgeous in bloom, bearing in great profusion large racemes of showy orange-crimson flowers. *B. superba* is an extensive climber similar to the preceding in other respects. Propagated by seed.

Buxus.

Euphorbiaceae.

B. sempervirens, the box plant of the temperate climate, succeeds only at the hill stations in S. India at elevations above 4,000 feet where it makes excellent hedges.

Butter Cup: *see Ranunculus.*

Cactus.

Cactaceae.

A large group of interesting plants, many of them ornamental, and ideally suited for rockeries exposed to the full sun. They thrive in a well-drained porous

soil, consisting of equal parts of ordinary garden loam and crushed debris, and should be watered sparingly. Nearly all are spiny. Those of the prickly-pear group are known as *Opuntia*, the columnar kinds are mostly of the *Cereus* group, those which are ovoid or globular are mostly of the *Mamillaria* group, the creeper kind are the *Pereskias*, and important among the spineless flowering kinds are the *Phyllocactus* and the *Epiphyllum*, popularly the Crab Cactus, or the Christmas Cactus. Nearly all produce gorgeous though extremely short lived flowers and the last named is perhaps the most showy and suitable for the conservatory. It is stemless and is therefore usually grafted on a 10—12 ins. stalk of *Cereus triangularis* and grown as a standard. *Epiphyllum* is somewhat sub-tropical in its requirements and thrives in partial shade. Propagation is easily effected by cuttings which should be allowed to dry up for a few days before they are put down in sand for rooting.

Caesalpinia.

Leguminosae.

C. pulcherrima (syn. *Poinciana* p. 273). Peacock flower or Barbados' Pride. Ornamental shrubs of moderate height (6—8 feet) with orange-red flowers borne almost all the year round. There is also a pure yellow variety. Raised from seed or cuttings. Useful

for hedges. *C. coriaria* is the well-known umbrella-shaped, *Divi-divi* tree. Medium sized, of spreading habit, fine feathery leaves, and inconspicuous but sweet-scented flowers. Propagated by seed.

Caladium.

Araceae.

A large group of highly ornamental foliage plants which are tuberous-rooted and of easy culture. The tubers are started shortly before the seasonal rains commence. They are potted up in 5 to 6 ins. pots about an inch deep from the surface of the soil in a compost rich in leafmould, and watered at first sparingly until the leaves open out, and placed in partial shade. In full growth, they need plenty of water, and are the better for occasional applications of liquid manure. When the leaves begin to turn yellow, on the approach of the hot weather, water should be gradually withheld and the pots placed on the side. When the soil is completely dry, the pots may be stored away intact in a cool dry room or the tubers lifted and placed in tins or boxes containing dry sand. There are numerous named varieties. *C. argyrites*, (syn. *C. Humboldtii*) is a very pretty dwarf form, with bright splashes of green and white. *C. bicolor* has pink centre and green margin. Other important varieties are: *Baron Rothschild*, *Peach Blossom*, *His Majesty*, *Duchess of Fife*, *Silver*

Fleece, Reine Marie de Portugal, Wightii, Chantinii
and *Virginale*.

Calathea.

Marantaceae.

A genus of ornamental foliage plants very closely allied to Marantas and requiring the same treatment. Many of them are natives of Brazil. *C. Veitchii* is perhaps the most showy in this class. *C. Zebrina*, *C. tigrina*, *C. Sanderiana*, etc., are also important. Propagated by division.

Calceolaria.

Scrophulariaceae.

Herbaceous perennials grown in this country as annuals from seed. *C. hybrida* is very showy, but succeeds only at the higher elevations. *C. pinnata* succeeds fairly well at medium elevations.

Calendula.

Compositae.

C. officinalis is the Pot Marigold. A most easily cultivated cold season annual 1—2 feet high and bearing in great profusion bright orange-yellow and lighter shades of flowers. Raised from seed. Does not transplant well; plants for the border are therefore raised by sowing where they are required to bloom.

Calla: see *Richardia*.

Calliopsis: see *Coreopsis*.

Callistemon.*Myrtaceae.*

C. lanceolatus, the Bottle-brush tree, is an attractive medium-sized tree of Australia with narrow leaves and pendulous branches bearing dense spikes of scarlet flowers resembling a bottle brush. Thrives with ordinary care and suitable for lawn planting. *C. brachyandrus* is a yellow-flowered species, suitable for medium to high elevations. Propagated by seed (which is very minute), or layering, or cuttings with bottom heat.

Callistephus: *see Aster (China).*

Calophyllum: *Alexandrian Laurel* . *Guttiferaceae.*

C. inophyllum is a beautiful shade tree with dark glossy green leaves like those of *Magnolia*; bears large racemes of delicate white flowers. Raised from seed.

Camellia.*Ternstroemiaceae.*

Flowering shrubs, closely allied to the tea plants, and well-known for the great beauty of their rose-like flowers. They succeed only at medium to high elevations and in partial shade. Propagated by layering or cuttings with bottom heat. *C. japonica* is the species commonly cultivated. *C. sasanqua* is perhaps a more satisfactory species. Camellias are slow growers and should be well fed.

Campanula.*Campanulaceae.*

Very showy flowering plants including the well-known Canterbury Bells which succeed only at the hill stations. Propagated by seed.

Cananga: (*Canangium odoratum*). *Anonaceae.*

A tall, erect and stately tree with pendulous branches and bearing abundant greenish-yellow fragrant flowers from which the celebrated *ylang-ylang* and the Macassar oil are made. Thrives in any ordinary soil. Quick growing. Raised from seed.

Canary creeper: *see Tropaeolum.*

Candytuft: *see Iberis.*

Canna.*Cannaceae.*

A most popular genus of stately flowering plants too well-known to need description. Cannas are best grown in large beds in the open or in large tubs or pots. Some of the recent hybrids are among the most gorgeous of tropical flowers and are unsurpassed for mass planting in self colours. Cannas are gross feeders and require plenty of water while growing. Pot plants should receive fresh compost every three to four months and top-dressing every six weeks. The beds should be renewed every year. Late in the summer, water should be withheld by degrees, and when the

leaves turn yellow, the clumps lifted and put away under a tree or in a box of sand. The tops should be cut back to 4 ins. from the base. The soil in the beds in the meantime should be well aerated, and just before the rains commence, refilled with a compost consisting of equal parts of garden loam, leaf-mould and half-fermented horse-manure. The clumps should now be divided into pieces each carrying 3 to 4 buds or eyes on them. Those that have the strongest buds should be selected and planted about 15—18 ins. apart, and about 2 ins. deep with a sprinkling of sand around the roots and watered sparingly until active growth begins. Liquid manure should be applied every week for a succession of bloom and the flower heads which have faded out should be cut back flush with the soil. There are several hundred named varieties of which the following are perhaps the choicest: *Butterfly, Conqueror, Black Prince, Flame, King Emperor, Beauty, Rose Queen, Venus, Vesta, Mrs. Eggar, Apricot, Debutante, President, Kroner, Rembrandt, King George V, Alpha, Tamerlane, First-word, Princes B. Von-Ratibor, Candellabra.*

The named varieties can be propagated true to the original only by cuttings of the root stock. Seeds obtained from the choicest varieties may also be planted.

The seedlings flower the first season and improve in quality as they grow.

Cannon-ball tree: *see* *Couroupita*.

Cape jasmine: *see* *Gardenia*.

Caralluma. *Asclepiadaceae.*

C. fimbriata is a dwarf succulent plant suitable for rockeries. The stems are leafless, slender and somewhat branched. The flowers are small, white and pink. *C. campanulata* (Syn. *Boucerosia c—*). Propagated by cuttings, like cactus, and requiring similar treatment.

Carludovica. *Cyclanthaceae.*

A genus of extremely elegant, palm-like, foliage plants, natives of tropical America suitable for the conservatory. *C. Drudei* is perhaps the most ornamental among the several species. *C. palmata* is the plant from which the well-known Panama hats are made. Easily raised from imported seed.

Carnations: *Dianthus caryophyllus.* *Caryophyllaceae.*

Very choice and popular perennials, but grown mostly as annuals in this climate. Much prized for the loveliness and fragrance of their flowers. As the plants suffer in the hot season, fresh plants are raised

every year from seed and these in fact give better results than those propagated by cuttings or layers from old plants. The seedlings are apt to run too readily into flower; when they are 8 ins. high, they should be headed back to 3 ins. to establish a strong root system. Light wire supports should be given to the leading stems. Free flowering is ensured by a sunny situation and liberal applications of liquid manure. Sow seed in September—October.

Cassia.

Leguminosae.

A large genus of very ornamental trees and shrubs which thrive with ordinary care on the plains. *C. Fistula* is an attractive tree in bloom bearing long racemes of bright yellow flowers, and is aptly called the Indian Laburnum. *C. nodosa* and *C. javanica* are among the most showy of this group. They are medium-sized trees of graceful spreading habit, pink-flowered and are gorgeous in bloom. *C. grandis* (Pink Shower) is also a large handsome tree. *C. alata*, *C. auriculata* and *C. corymbosa* are attractive, yellow and orange flowered border shrubs. All are easily propagated by seed.

Casuarina: (*Beefwood. She-Oak*). *Casuarinaceae.*

C. equisetifolia and other species are ornamental Australian trees planted chiefly as wind-breaks in large

gardens. They have light foliage and a striking appearance, and are particularly useful on sandy soil close to the sea-coast or on brackish or alkaline soils where few other trees will grow; can be clipped down to any desired height and make very good hedges. Easily raised from seed, which is very minute and much attacked by ants when put down in seed pans. To prevent this the pans should be placed on a bed of wood ashes.

Celosia: *Cockscomb.* *Amarantaceae.*

C. cristata is a showy and popular garden annual, bearing large, bright velvety, crested flower heads which are orange, yellow, or crimson. Easily raised from seed.

Centaurea: *Compositae.*

Cornflower, Dusty Miller, Batchelor's Button.

C. cyanus is a showy annual, easily cultivated, but does not flower freely on the plains. A very desirable plant for medium and high elevations. Height 1—2 feet. Flowers blue, pink or white. Seeds germinate very freely and rapidly.

Centranthus. *Valerianaceae.*

C. macrosiphon is an annual suited to the higher elevations. Height 1—2 feet. Flowers deep rose,

excellent for cutting and for rockeries. There is also a white-flowered variety (*albus*) and a dwarf variety (*nanus*). Easily raised from seed.

Centropogon.

Campanulaceae.

C. Lucyanus is an attractive flowering pot plant for medium elevations. Height 1½ feet. Bright rose-red tubular flowers. Propagated by cuttings.

Century plant: *Agave americana.*

Cestrum.

Solanaceae.

A genus of ornamental, easily cultivated shrubs, of which only the *C. nocturnum*, popularly known as the *Night Queen* (or *Hasunahana*) thrives on the plains and bears abundant inconspicuous flowers which diffuse their fragrance to a great distance in the night. A very desirable plant in the shrubbery. Propagated easily by cuttings; grown also as a pot plant. *C. elegans*, *C. aurantiacum* are remarkable for their showy clusters of tubular flowers which are red-purple and orange-yellow respectively. These succeed only at medium elevations.

Cheiranthus: (*Wall Flower*).

Cruciferae.

C. Cheiri is a popular perennial of the temperate climate but succeeds as a cold season annual at medium

elevations. It is closely allied to the stock and requires the same treatment. Raised from seed sown in October.

Chiococca.

Rubiaceae.

C. racemosa, popularly known as snowberry, is an attractive shrub of tropical America, of medium height (5—6 feet); bears large panicles of tiny yellowish white flowers. Propagated by seed or cuttings. Thrives in ordinary soil.

Chonemorpha.

Apocynaceae.

C. macrophylla is an extensive ornamental twiner of Ceylon, with large leaves, and bearing large showy, white, scented flowers. Propagated by layers.

Chrysanthemum: (*Greek, golden flower*). *Compositae.*

Universal favourites of great beauty and elegance. They respond well to care and skill in cultivation. Although rooted suckers started as late as October will also come into bloom the same season, best results are obtainable only from plants started from cuttings in February. After the flowering is over, the stems should be cut back flush with the soil and the pots top-dressed. This causes strong suckers to come up in a few days. Terminal cuttings 3 to 4 ins. long should be taken from the most vigorous of these suck-

ers when they are about 6 ins. high and rooted in sand; these should be potted up without delay in 4 ins. pots in rich compost and then transferred to pots 2 ins. larger with each shift. By the end of September they should have a strong root system. They should then receive a final shift into 10 ins. or 12 ins. pots (according to the vigour of each plant). They should be given firm stakes about 4 feet long when 6 inches high. Chrysanthemums are gross feeders, and half-fermented horse-manure makes a very good compost with one part of red earth and one of sand for every three parts of the manure. As the buds swell, the plants should be fed with liquid manure. If the leaves are very bluish green and brittle, it is a sign that feeding is overdone and liquid manure should be withheld. Yellow, sickly looking plants should receive a top-dressing of rich horse-manure, and occasionally liquid manure when they are in active growth.

The dis-budding of Chrysanthemums so as to secure large blooms is very important. The smaller single-flowered varieties, which are very elegant as cut flowers, should be induced to form lateral growth to make bushy plants. For this purpose, the tops should be pinched out when the plants are 6 ins. high, and no buds allowed until the plant has attained the desired

size and shape. Plants of this type which have a profusion of smaller blooms are often more attractive than the large-flowered varieties. In growing the large exhibition varieties, very close attention is necessary as regards dis-budding. One should learn to recognise the difference between what are called *crown* buds and *terminal* buds. When plants are grown on a single stem, and well established early in the season, they often produce a single bud at the top with several side shoots lower down. These are called *crown* buds, and where such are formed, the removal of the lateral shoots completes the work of dis-budding. But the crown bud often forms a somewhat coarse flower, though mammoth-sized. If the crown bud is removed, then the lateral shoots terminate in more than one bud. The central one on each shoot is retained, and the side buds are rubbed off. In this manner three or four terminal buds are saved on each plant on as many lateral shoots, and these give the best results on the whole. The florists' Chrysanthemums are derived mostly from *C. hortorum*, and are divided, according to the shape of the flowers, into several types, namely, the *Incurved*, which have their petals curved towards the centre, the *Reflexed*, with petals curving outwards, the *anemone-flowered*, the *pompons*, etc. There are countless named

varieties which are described in nursery catalogues. They are conveniently obtained in the months of February and March by parcel post at a nominal cost from the Agri-Horticultural Gardens, Madras, where the choicest imported varieties are in stock. *C. leucanthemum* is the Ox-eye Daisy or Shasta Daisy, *C. coronarium* is of the annual group, as also *C. segetum*. *C. frutescens* is the Marguerite or Paris Daisy. All these are suited only to the higher elevations. They thrive indifferently on the plains in the cold season but can seldom be brought into bloom. Chrysanthemums are often attacked by plant lice when they should be sprayed with tobacco water or rosin wash.

Cineraria.

Compositae.

A genus of easily cultivated and extremely handsome flowering plants treated as annuals in this climate. They thrive at medium elevations and require partial shade. On the plains the plants grow luxuriantly until late in the summer but do not flower freely. The seed is minute but germinates well. *C. stellata* is perhaps the most satisfactory species. The flowers are blue, pink or purple-red. Cuttings may also be employed for propagation. *C. maritima* is a dwarf pot

plant with finely cut silvery foliage and suitable for the conservatory.

Cissus.

Vitaceae.

C. discolor is a beautiful tendril climber with rich variegated leaves and suitable for the conservatory. It requires a humid atmosphere and plenty of shade and a light porous soil. The leaves are reddish green, mottled with silvery white above, and reddish beneath. Flowers inconspicuous. Propagated by cuttings.

Clarkia.

Onagraceae.

C. elegans, as the name indicates, is an excellent free-flowering annual, 2—3 feet high with beautiful purple or rose-coloured flowers; single and double varieties. Suitable for medium elevations. Propagated by seed.

Clematis: (*Virgin's Bower*).

Ranunculaceae.

A large genus of extremely ornamental flowering climbers (including the large violet and purple-flowered *Jackmannii* hybrids), of which only *C. Gouriana*, a vigorous white-flowered species, thrives on the plains and produces in great abundance, every summer, great masses of delightfully fragrant bloom. After flowering it can be pruned back considerably every year, as it is the young wood that flowers. Propagated by layer-

ing or by cuttings with bottom heat. Very suitable for covering porches and arbours. The pruning should not go beyond the first two or three buds at the base of the current season's growth.

Cleome: (*Spider Plant*). *Capparidaceae*.

C. viscosa is a fairly attractive flowering shrub, about 2 feet high, bearing rose-coloured and rather odd looking flowers. *C. rosea* and *C. speciosissima* are other species, also rose-coloured and free flowering. About 3 feet high and very useful as a background for floral borders. Easily raised from seed sown in October on the plains.

Clerodendron. *Verbenaceae*.

A very large genus in which are to be found some of the most showy tropical flowering plants; easily cultivated. Some are shrubs, others climbers. Flowers, red, white or blue. Nearly all are propagated readily from cuttings or root cuttings in preference to seed. *C. Balfourii* (or properly *C. Thomsonae*) is the best among the twining kinds. The cuttings should be grown on until they are ready for 8 ins. pot. They should remain without a shift until they are pot bound. From August water should be given very sparingly when most of the leaves will drop. After two months they should be given a thorough soaking with water and

syringed twice or thrice a day; this causes young growths to start all over the ripened wood. The plants should then be re-potted with rich compost. This causes a profusion of bright red flowers with snow-white bracts, and the plants remain in great beauty for several weeks. Among the shrubs, the most important are *C. fallax*, leaves large, heart-shaped, dark green, flowers bright scarlet, in large compact clusters; *C. paniculatum* (Pagoda flower) 5—6 feet, flowers, a beautiful coral red, in a large terminal pyramidal head fully 12 ins. or more across. A stately and magnificent shrub. Requires a rich soil and plenty of water in the growing season. Fresh plants should be started every summer from young terminal cuttings for planting out in the succeeding cold season. *C. fragrans* has sweet-scented white flowers shaded crimson; desirable only as a pot plant, as it sends up too many suckers from the roots to a great distance, if planted in the ground. *C. nutans* bears greenish white flowers in long drooping racemes and is very distinctive. *C. siphonanthus* is another border shrub with leaves in whorls and long white flowers. Also numerous other species, all very showy.

Clanthus: Glory Pea; Parrot's Beak. *Leguminosae*.

A delicate plant, which succeeds only at the higher elevations and is difficult to grow. Much prized for its showy flowers of unique appearance which are about 3 ins. long, rich crimson with a raised centre which is velvety-purple-black. *C. Dampieri* is the species commonly cultivated. Raised from seed and grown as a pot plant.

Clitoria: (*Butterfly-Pea*). *Leguminosae*.

C. Ternatea is a pretty indigenous climber with deep blue, or purple flowers varying to white. It is best grown as an annual, but the numerous seed pods it produces from which self-sown seedlings come up everywhere in the garden are the chief objection to the plant. There are "double" deep blue and white varieties which thrive at medium elevations.

Clivia: *Syn. Imantophyllum*. *Amaryllidaceae*.

C. nobilis, etc., are bulbous plants with handsome, dark green foliage and bright orange-red flowers in large umbels. Treatment same as for *Amaryllis*. Propagated by division. Suited to medium elevations.

Cobaea. *Polemoniaceae*.

C. scandens is a rapid growing attractive climber, best treated as an annual, propagated by seed, and bearing light violet or greenish purple, bell-shaped flowers.

Cockscomb: *see Celosia.*

Codiaeum: (*Croton*). *Euphorbiaceae.*

Chiefly natives of the Moluccas, these are undoubtedly the most gorgeous among tropical foliage plants presenting a great variety in size, shape of leaves and splashes of colour. As ornamentals for the gardens of S. India, especially in the moist coastal regions, they stand almost unsurpassed. Easily propagated from cuttings in the rainy and the cold seasons in a bed or box of crisp river sand. In the summer they are rooted under a glass frame. Young terminal wood, which is just beginning to harden, produces more vigorous and freely branching plants than either woody cuttings or younger wood from weak lanky growth made under adverse conditions. The rooted cuttings should be started in small pots (4 ins. size) in a rich compost, and *gradually* shifted into larger pots. Partial shade is necessary in the hot weather and full sun in the cooler months. Liquid manure is very beneficial during active growth, as also frequent syringing of foliage to remove the dust and to secure bright and richly coloured foliage. Pots larger than 18 ins. are not desirable as drainage and regulating the moisture content of the soil become difficult, except in very

skilled hands. Tubs are often used for exceptionally large specimen plants. If the plants are exposed to the direct sun in mid-summer, or the water at the roots is insufficient, the lower leaves on the main limbs are shed as soon as fresh growth is made in the succeeding rainy season, and the plants become unpresentable, and it is seldom possible to restore them to their proper shape and balance. The best means of improving them is to remove the tops by *gootee* (page 71, Fig. 20). There are over one hundred named varieties, besides a large number of unnamed seedlings of rare merit. New varieties are raised from seed. Among the most showy varieties the following are important: Baronne de Rothschild, Sunset, Reidii, Mutabilis, Her Majesty, Maharaja of Durbhanga, Dayspring, Challenger, Williamsii, Prince of Wales, Princess of Wales, The Czar, Sunrise, Schomburgkiana (Red and Yellow varieties), Sir Ashley Eden, Jamesii, Alexandra, Maharani, Warrenii (Red and White varieties), Kingianus var. Goldiana, Triumphans.

Coleus.

Labiatae.

One of the most easily cultivated and extremely quick growing foliage plants, in numerous varieties and with bright variegations of colour, all of which are best grown as annuals from seed, although named varieties

of unusual merit are propagated by cuttings of young terminal wood in sand. They require a rich soil, plenty of water while growing, occasionally liquid manure, and always partial shade. The flowers, mostly blue or lilac in terminal spike-like racemes, are not retained, in order to throw all the vigour of the plant into leaf growth. *C. Rehneltianus* is a very dwarf variety with a decumbent habit, and extremely useful for carpet bedding and hanging baskets. Leaves, small heart-shaped, blotched dark brown, flowers purplish-blue. Best propagated by cuttings, but it is safe to collect also some seed and keep in reserve, as the plants are apt to be lost in the summer unless they are plentifully propagated, and started on fresh roots. *C. thyrsoides* is a green-leaved Coleus which bears beautiful bright blue flowers in large racemes with forking cymes.

Colocasia.

Araceae.

Ornamental foliage plants of Pegu, closely allied to Caladiums and Alocasias with which the term is often used synonymously, and requiring the same treatment. *C. antiquorum* var. *esculenta* (*Caladium esculentum*) has very large leaves presenting a noble aspect and produces edible tubers.

Columbine: *Aquilegia*.

Colvillea.

Leguminosae.

C. racemosa is a large ornamental tree of Madagascar with handsome pinnate leaves, somewhat like *Poinciana regia*, and bears long drooping racemes of bright scarlet flowers. Propagated by seed.

Combretum.

Combretaceae.

C. coccineum (syn. *Poivreia coccinea*) is an ornamental climber. Bears small, bright red flowers in large handsome panicles. Easily cultivated. Propagated by layering.

Congea.

Verbenaceae.

C. tomentosa is a beautiful climber of vigorous habit, and remarkable for its large sprays of mauve-pink velvety bracts, quite as showy as flowers, which are retained for several weeks. Propagated by cuttings or layers.

Convolvulus.

Convolvulaceae.

A large genus of very ornamental and easily cultivated climbers, closely allied to the Ipomoeas. *C. tricolor* is important among the annual kinds. *C. aureus superbus* bears flowers which are golden yellow. *C. purpureus*, *C. japonicus* and *C. sepium* are other perennial species suitable for medium elevations. All are easily raised from seed.

Cordyline.*Liliaceae.*

Ornamental foliage plants of medium height and very symmetrical growth. The name is often used as a synonym for *Dracaena* to which it is closely allied. *C. indivisa* (syn. *C. australis*) is easily raised from seed. It is one of the most popular in the group. *C. terminalis* var. *Baptistii*, *C. Duffi*, and *C. Fraseri* are other showy species. Propagated by cuttings of the ripened stem or trunk. See *Dracaena*.

Coreopsis: Syn. *Calliopsis*.*Compositae.*

Dwarf, showy annuals. The perennial kinds are also treated as annuals. *C. grandiflora* bears yellow flowers with dark brown centre. *C. tinctoria*, flowers dark crimson, *C. Drummondii* bears bright yellow flowers. All bloom freely with little care. Easily raised from seed which is very minute but germinates well. Should be sown in October on the plains.

Cosmos.*Compositae.*

One of the most easily cultivated and popular annuals, 2—3 feet high, with finely cut leaves, and showy flowers. *C. bipinnatus*, flowers white, rose, pink, crimson and purple. *C. sulphureus*, flowers bright orange-yellow. Plants must not be allowed to flower before they are made bushy by pinching out the tops. Raised from seed.

Costus.*Zingiberaceae.*

Indigenous foliage plants of dwarf or semi-dwarf habit and leafy stems, and bright velvety or satiny leaves. They require the same soil as the ferns. Very effective as pot plants and on rockeries in partial shade. There are as many as 50 varieties in cultivation. *C. elegans*, *C. pictus* and *C. speciosus* are important. Propagated easily by division or by cuttings of the leaf stalks.

Cotyledon: Syn. *Echeveria*.*Crassulaceae.*

Dwarf, succulent plants, belonging to the Cape of Good Hope, with leaves in dense rosettes and very useful for edgings at the higher elevations. *C. metallica* and *C. glauca* are the species commonly cultivated. They do not thrive on the plains. Propagated by leaves taken with the dormant bud in the axil of the leaf and rooted in sand; the leaves should not be watered until the roots are formed.

Couroupita.*Lecythidaceae.*

C. guianensis is the Cannon-Ball Tree, tall and erect growing, with large showy flowers, fleshy, strong-scented and of curious shape, in long drooping

racemes borne on the trunk. Fruits large with strong foetid odour while ripening. Propagated by seed sown fresh.

Cowslip Creeper: *Pergularia*.

Crepe Myrtle: *Lagerstroemia*.

Crinum.

Amaryllidaceae.

A large genus of bulbous plants closely allied to Amaryllis and bearing large and showy flowers. The crinums are as a rule more successful and free flowering than the Amaryllis on the plains. Many of the best species are from tropical Africa. Flowers white or in shades of red and often very fragrant. They require a rich soil and a sunny situation. *C. americanum*, flowers, purplish-red outside, white inside. Thrives in swampy places. *C. asiaticum* has white, scented flowers, *C. augustum*, pink and white flowers, *C. Moorei*, pale rose, *C. Powellii*, pale pink and *C. giganteum*, fragrant white. Also numerous other species and hybrids. Propagated by offsets. Rarely by seed.

Crossandra.

Acanthaceae.

C. undulaefolia (*C. infundibuliformis*) is a useful border shrub, of medium height and free flowering, bearing bright scarlet-orange flowers in 4-sided spikes. Propagated by cuttings or by seed. There is also a

variety which bears deep yellow flowers. This is propagated by cuttings, as it is never known to bear seed in this climate. Plants started on fresh roots every two years give better results than old ones.

Crotolaria.

Leguminosae.

Indigenous flowering shrubs easily raised from seed. *C. laburnifolia*, 2—4 feet high, bears pure yellow flowers. *C. verrucosa* is a more showy species, flowers racemose, variegated, blue. Annual. •

Crotons: *See Codiacum.*

Cryptanthus.

Bromeliaceae.

Foliage pot plants, epiphytal, suitable for the conservatory or for rockeries. Treatment same as for Billbergias. *C. zonatus* is a showy species, with transverse bands of white. Propagated by suckers.

Cupressus: (*Cypress*).

Pinaceae.

Although the cypresses thrive in this country only at the higher elevations, with the close attention given to garden plants, some of the species can be cultivated even on the plains, and being objects of great beauty, they are worth all the care they demand. In the moist climate of the sea coast they are usually safe only as pot plants in partial shade and well-protected from the

summer winds. *C. sempervirens* is the species that seems to stand tropical conditions better than the others. A deep, sandy-loam is the soil they like best. Raised from fresh seed sown in October. Germination takes several weeks. *C. funebris*, the weeping cypress, *C. elegans*, etc., are suitable for the hill stations.

Curculigo.

Amaryllidaceae.

A genus of foliage plants with palm-like leaves. Flowers inconspicuous. Easily cultivated, Stemless. Propagated by division. *C. recurvata* is the species usually cultivated. Height 2—3 feet.

Cyanophyllum: syn. *Miconia*.

Melastomaceae.

C. magnificum is a foliage plant of great beauty, with large magnificent leaves of a rich velvety green above and reddish purple on the underside. Height 4—5 feet. Does well at medium elevations. Propagated by cuttings with bottom heat or by layers.

Cycas: (*Cycad*).

Cycadaceae.

Magnificent foliage plants (natives of China, Japan and the Malabar Coast), with large beautiful, dark, glossy-green, pinnate leaves, somewhat like those of a palm, and very useful for decoration. Cycads are rather slow growing plants which may be either put into the ground or grown as pot plants in large

tubs. *C. circinalis*, and *C. revoluta* and several other species are in cultivation. The female flowers which are borne on separate plants should be hand-pollinated to insure fertilization, and seed thus pollinated sown in sand within a month after ripening. Suckers from old plants may also be removed in a dormant state and rooted in sand. The plants require partial shade in active growing condition.

Cyclamen.

Primulaceae.

There are few plants which surpass cyclamens in elegance of form and wealth of colour. But they are successful only at the higher elevations in India. With good care, imported tubers or corms flower satisfactorily at medium elevations. Flowers large, purple, rose or white. Small 5 to 6 ins. pots are suitable. The soil should be rich but porous. The florists' cyclamens are mostly derived from *C. persicum*. Seeds take several weeks to germinate and when the first leaves appear should be potted up in small 3 ins. pots and grown on gradually in larger sizes.

Cyperus.

Cyperaceae.

Handsome foliage plants of easy culture. *C. alternifolius* is the popular Umbrella Plant, with radiating feathery leaves. Height 3—4 feet. Thrives in damp soil or as a semi-aquatic. There is also a variegated

form. *C. elegans* is a dwarfer form. Propagated by division.

Cypress: (*Cupressus*).

Cyrtodeira: (Syn. *Episcia*). *Gesneriaceae*.

C. fulgida is a much prized conservatory plant of trailing habit, extremely well suited for hanging baskets. Leaves plush-like, with flowers bright red. Requires partial shade. Remains semi-dormant in the hot weather. Grows well on rockeries in pockets of laterite filled with leaf-mould. Propagated by cuttings of off-shoots.

Daedalacanthus. *Acanthaceae*.

D. nervosus is a fairly showy flowering shrub; height 4—5 feet, flowers deep blue, suitable for the mixed border or shrubbery. Needs a light rich soil, and a sunny situation. *D. Wattii* is a more desirable species, as it is dwarfer and produces larger flowers, which are violet blue; thrives at medium elevations. Propagated by cuttings.

Dahlia. *Compositae*.

One of the most gorgeous and free blooming seasonal flowers of the perennial class on the plains. Named varieties, which are countless, are propagated by tubers, in the summer on the hills and at stations

which receive the south-west monsoon and in September—October at other places. The dry tubers should first be placed in a corner in the shade lightly covered with soil and sprinkled with water. When the 'eyes' start into growth, the clumps should be divided into portions each containing at least one 'eye.' These should be potted up in 5—6 ins. pots, in rich soil, with a sprinkling of sand on the roots and watered moderately at first. If more than one shoot come up, they should be rubbed off, leaving only the strongest to grow. When this is about 8 ins. high, it should be topped, and the plant potted in a rich compost of half-fermented horse manure, red loam and sand in the proportion of 2: 1: 1, in 10—12 ins. pots, or planted in the ground, and given a stake. As the plants grow they should be top-dressed with fresh manure and when they come into bloom should be fed with liquid manure. Dahlias are classified by the commercial growers into several groups, varying according to the height of the plant, as well as the shape of the flowers. Pompons, the Century Dahlias, Collarettes, Peony-flowered, Anemone, Cactus, Stella, and Decorative are some of the leading and distinct groups, in which there are single, double and intermediate sorts, also tall, medium and dwarf. Each group presents a wide range of colours: white, rose, red, yellow, orange, cerise, magenta and

intermediate shades, lacking only the sky blue and other closely allied hues. There is also a group known as Tom Thumb (very dwarf), and another, of the fragrant Dahlias. Dahlias can also be propagated by cuttings or by seed, in which case they require the same treatment as annuals, but the results are not so satisfactory as those obtained from tubers. The latter are stored in the same way as *Achimenes* (vide page 109).

Daisy.

Compositae.

This is a popular name given to various plants. The true English Daisy is *Bellis perennis* which thrives only indifferently as an annual on the plains. Seedlings saved through the hot weather blossom freely the second season at medium elevations. The Australian Daisy is *Vittadinia triloba*. It grows with little care everywhere. The Ox-Eye Daisy or Shasta Daisy is *Chrysanthemum leucanthemum* which does well only at medium to high elevations. The Transvaal Daisy or the Barberton Daisy is *Gerbera Jamesonii*, one of the prettiest perennials that can be grown successfully on the plains. The Tree Daisy is *Montanoa bipinnatifida*, a large shrub which flowers in great profusion, but rather unsuited to places which are subject to excessively moist heat.

Datura: (Syn. *Brugmansia*). *Solanaceae*.

Many of the species grow as wild plants in S. India, and although showy with their large trumpet-shaped flowers, they are not very desirable as garden plants except *D. suaveolens*, (*Brugmansia*) which is a tall shrub, bearing numerous white, sweet-scented flowers. Propagated easily by cuttings in the rains.

Delphinium: (*Larkspur*). *Ranunculaceae*.

The annual and perennial kinds are both treated as annuals in this climate and thrive well only at medium to high elevations. On the plains they are difficult to cultivate, flower indifferently, and do not develop the deep colours which characterise them at the higher altitudes. Raised from seed. Of the numerous species and varieties, *D. hybridum* is the best for the lower altitudes.

Derris. *Leguminosae*.

D. scandens is a strong, woody climber that can attain its full height only when allowed to climb over gigantic trees which it completely envelops and presents a gorgeous sight when loaded with its long racemes of pale rose flowers. *D. Heyneana*, indigenous to Mysore, is similar to the last, but of less extensive growth. Raised from seed.

Dianthus: (*Pinks*).

Caryophyllaceae.

The Pinks are grown as annuals in this climate and give very satisfactory results. For *D. Caryophyllus* (Clove Pink) see Carnation. *D. Chinensis* (Indian Pink) is the species best suited for the plains. Easily raised from seed and presents a wide range of colour in white and shades of red with numerous variations and markings. Best grown as pot plants which should grow bushy before they are allowed to flower. The seed capsules should be promptly removed from the faded flowers for a succession of bloom. Many of the other species and hybrids such as *D. superbus*, *D. semperflorens*, var. *Hedderwigii*, var. *laciniatus*, and *D. imperialis*, are also satisfactory. *D. barbatus* is the Sweet William, which does well only at medium to high elevations. Cuttings from the previous year's plants root freely and are serviceable for early bloom but are not floriferous.

Dieffenbachia.

Araceae.

A large genus of bright looking foliage plants of tropical S. America and West Indies, of medium height, easily cultivated and can stand a great deal of neglect. Of the numerous species and varieties, the following are important: *D. Baumannii*, blotched creamy white (the juice is highly acrid), *D. eburnea*, light

green, spotted with white, white ribbed, and *D. Jenmanii* glossy green relieved by a pure white band and white spots. Propagated easily by cuttings.

Digitalis.

Scrophulariaceae.

Showy flowering plants which succeed only at the higher elevations. *D. purpurea* is the common Foxglove, which is propagated by seed and treated as an annual.

Dillenia.

Dilleniaceae.

D. indica is a handsome, medium-sized tree, of dense spreading habit, with large leaves and large white flowers, succeeded by large round fruits. Well worth cultivating as an ornamental tree. Rather slow growing. Propagated by seed.

Dipladenia.

Apocynaceae.

Extremely showy flowering climbers of tropical America, which thrive best at medium elevations. *D. amabilis* bears bright rosy crimson flowers. It requires a light rich soil and protection in a conservatory on the plains. Propagated by cuttings or layers.

Divi-divi: *Caesalpinia coriaria.*

Dombeya.

Sterculiaceae.

Large, quick growing flowering plants, suitable for

the shrubby, bearing profusely, large clusters of white, rose or salmon pink flowers. *D. angulata* with pink, *D. Mastersii*, creamy white and *D. natalensis* pure white, large, sweet-scented flowers are the important species. There are also many recent hybrids. Propagated easily by cuttings.

Dracaena.

Liliaceae.

A magnificent group of foliage plants, remarkable for their symmetry of form and the rich variegation of their leaves. Splendid house plants. Allied to *Cordyline*. *D. fragrans* is one of the tallest (20 feet) and is suitable for the shrubbery, *D. Victoria*, var. *Massangeana* with broad yellow stripes, 3—4 feet is one of the most showy. Requires partial shade. *D. Goldieana* and *D. Sanderiana* are important conservatory plants with a rich variegation. There are also numerous other species which are worth a place in every large collection. Propagated by *gootee* or by stem cuttings of old wood in sand.

Duranta: *Golden Dew Drop.*

Verbenaceae.

Pretty flowering shrubs of the West Indies, of tall, spreading habit, very attractive in the mixed border both in bloom and in fruit which hangs in large clusters. *Durantas* are also very useful for hedges. *D.*

Plumieri bears pretty lilac coloured flowers in long, loose racemes. There is also a white flowered variety. Propagated easily by cuttings or by seed.

Echeveria: *Cotyledon*.

Echites.

Apocynaceae.

E. rubro-venosa is an extensive, vigorous climber suitable for live screens. Leaves with reddish veins. Flowers, in great abundance, white, sweet-scented. Indigenous and of classical fame. Known in Sanskrit as *Mâlati*. Propagated by layers, or seed if available.

Encephalartos.

Cycadaceae.

Large, noble-looking foliage plants or very dwarf trees of tropical Africa closely resembling the Cycads and requiring the same treatment, *E. Hilderbrandtii* and *E. horridus* are the chief species. See *Cycas*.

Epiphyllum.

Cactaceae.

Popularly called *Crab Cactus* or *Christmas Cactus*. Several species and varieties. *E. truncatum* is a dwarf, spineless Cactus which bears in the cold season very showy, large, rose coloured flowers in profusion. Needs a light porous soil and partial shade. Propagated by cuttings. Epiphyllums are very effective as dwarf standards grafted on *Pereskia* or on *Cereus triangularis*.

Episcia: *Cyrtodeira*.

Eranthemum.

Acanthaceae.

Attractive foliage shrubs of medium height, some of which produce also fairly showy flowers. *E. atropurpureum* has deep bronze or purplish variegation. *E. Eldorado*, *E. tricolor*, *E. versicolor* are important species. For culture, etc., see *Daedalacanthus*.

Erythrina: *Coral-Tree*.

Leguminosae.

Bright flowered trees, some very dwarf shrubs of the easiest culture. *E. indica* is a good sized tree, with prickly stem, common in S. India and very attractive in February when, nearly devoid of leaves, it bears large scarlet flowers in dense short racemes. Raised from seed or cuttings for which stout pieces of the stem may also be used. *E. Crista-galli* is a dwarf species with large, crimson flowers. *E. marmorata* has bright variegated leaves of green and yellow.

Eschscholtzia.

Papaveraceae.

E. californica is a bright and showy annual, popularly called the Californian Poppy, which thrives only at medium to high elevations. Propagated by seed usually sown where the plants are to remain, as the seedlings do not bear transplanting well.

Eucalyptus.*Myrtaceae.*

The Blue Gums. A large genus of gigantic trees of Australia, well known for the oil which they yield. There are numerous species all of which thrive at medium to high elevations. But *E. rostrata* and *E. citriodora* (lemon-scented) grow also on the plains. *E. flicifolius* with its profusion of crimson flowers is one of the most showy. *E. globulus* is the typical Blue Gum. Propagated by seed.

Eucharis.*Amaryllidaceae.*

Bulbous plants of tropical America which are easily cultivated, and attractive even as foliage plants and most beautiful in bloom. *E. grandiflora*, (*E. amazonica*), also known as Star of Bethlehem and as Amazon Lily, bears large umbels of snow white, very fragrant star like flowers. Requires partial shade. The plants should be re-potted in September, the larger bulbs separately in light rich soil for flowering and the offsets for growing on for the next season. *E. candida* is a smaller flowered species. Propagated by offsets.

Eugenia.*Myrtaceae.*

A genus of handsome trees and shrubs with bright glossy green leaves. *E. jambos* is the Rose Apple tree. It is of medium height with graceful pendulous branches. *E. malaccensis* is a large and attractive

shade tree; also several other species. Raised from seed.

Eupatorium.

Compositae.

A genus of shrubs useful for low hedges or edgings, *E. hetero-clinum* is easily propagated by cuttings and can be closely clipped down to 6 ins. as an edging. Its bluish flowers are of no particular merit. *E. odoratum* is a dwarf shrub which bears numerous, tiny, fragrant flowers.

Euphorbia: *Milkweed, Spurge.*

Euphorbiaceae.

A large genus of shrubs, some of which closely resemble the cactus plants and require the same treatment. *E. Bojeri*, 3—4 feet, is a straggly bush of Madagascar, full of spines about an inch long on the stems, and showy bright vermilion coloured bracts nearly all the year round. Stands any amount of heat and drought. *E. splendens* is another species very similar to the last. *E. Jacquiniflora* is one of the most beautiful plants in bloom. It thrives at medium elevations. Easily propagated by cuttings.

Eurycles.

Amaryllidaceae.

Easily cultivated and free flowering bulbous plants with large round leaves and bearing large umbels of

handsome, creamy white flowers each $1\frac{1}{2}$ —2 ins. across. Scape 1—2 feet high. *E. amboinensis* (*E. sylvestris*) is the species largely cultivated. *E. Cunninghamii* is another important species.

Excoecaria.

Euphorbiaceae.

E. bicolor is a fairly attractive shrub of medium height with small ovate leaves, deep crimson beneath. Flowers inconspicuous. Propagated by cuttings in the rains.

Ferns.

The Maiden-hair and many of the tropical ferns are universal favourites and are almost unsurpassed for their beauty and elegance among foliage plants. They are indispensable even in small gardens. They heighten the effect of the flowering plants in the conservatory and are also great ornaments as pot plants by themselves, while nothing can take their place in the arrangement of cut flowers. The essentials to success with ferns are a compost rich in leaf-mould, good drainage, plenty of room for spreading (as when placed in pans of medium depth), shade, a moist atmosphere and protection against hot winds in the summer. They are usually potted up just before the rains, the clumps being divided into as many portions as may be desired.

A compost consisting of 2 parts crushed debris, 2 parts leaf-mould, and 1 part sand is admirably suited for ferns. To ensure thorough drainage, the bottom of the pots to a third of their depth should be filled with potsherd or pieces of brick and covered with a thin layer of chopped grass or cocoanut fibre (preferably dry moss) before adding the compost. Plants placed on the verandah should be thoroughly syringed at least two or three times a week, especially in the summer, to keep their foliage in a healthy condition.

The propagation of ferns by means of spores is seldom attempted, as nearly all species can be easily increased by division of roots. But spores can be as successfully employed for the purpose. The type of pan described on page 62 (Fig. 15) is well suited for sowing them. The bottom half of the pan should be filled with potsherd, and the remaining portion with the compost as described above. The pan should be watered and left for a day before sowing. The spores should then be scattered evenly on the surface and the pan covered with a pane of glass, which should be lifted and re-placed upside down each morning. Subsequent watering should be done as described on page 63, only once in 3 or 4 days. The spores will start into growth in about a month. The young plants should be trans-

planted into pans two inches apart when the first fronds are about an inch high.

Adiantum or the Maiden-hair Ferns are among the most beautiful and easily cultivated in this climate. There are numerous species of which *A. Farleyense* is by far the most showy. It is rather delicate and requires careful protection against the strong sun and hot winds in the summer. Its roots should not be disturbed except during the rains when it can be increased by division. There should be plentiful duplicates before attempting to grow specimen plants in large pots. *A. capillus veneris*, *A. Bausei*, *A. concinnum*, *A. cuneatum*, *A. lunulatum*, *A. trapeziforme*, *A. intermedium*, *A. Fergusonii*, *A. Collisii*, etc., are very attractive species. *A. Peruvianum* is of a large habit and a very vigorous grower.

Asplenium is another important genus including *A. nidus avis* or the well-known Bird's-nest Fern which thrives well in this climate. Its fronds in a well-grown specimen are more than 3 feet long, and of a pale apple-green colour and midribs of a dark-chocolate colour. Other important species in this group are: *A. lunulatum*, *A. bulbiferum*, *A. formosum*, *A. hispidum*, *A. mucronatum*, *A. adiantoides*, etc.

Nephrolepis is another extensive genus of highly ornamental and popular ferns. *N. exaltata*, one of the most attractive, contains several horticultural varieties, such as *compacta*, *elegantissima*, etc. *N. cordifolia*, *N. Duffii*, *N. tripinnatifida*, *N. acuta* and *N. Davallioides* are other desirable species.

Davallia with its several species, is an extremely elegant genus of which *D. tenuifolia*, *D. fijiensis*, *D. canariensis* are important.

Pteris is also an extensive genus, of which *P. argyraea*, *P. quadriaurita*, *P. cretica albolineata*, *P. victoricae*, etc., are very elegant.

Actiniopteris is a genus of very pretty dwarf ferns like miniature fan palms. *A. flabellata* and *A. radiata* are very attractive.

Platycerium is the Stag's-Horn Fern, of which the species *P. alcicorne* is the true Elk's-Horn; best grown as an epiphyte on a log of wood or in a hanging-basket like an orchid.

Gymnogramma is another important genus, noted for its elegance, including *G. chrysophylla* or the Gold Fern, and *G. pulchella* or the Silver Fern.

Lygodium is a genus of beautiful climbing ferns of which *L. scandens* is indigenous to Mysore. It thrives

easily on the plains and is well worth a place in the conservatory and can be made to cover the pillars of a portico with exquisite effect.

Other elegant ferns which are suitable for cultivation on the plains and which deserve a place in every good collection are *Aspidium subtriphyllum*, *Dicksonia glabra* (one of the class of tree ferns), *Osmunda javanica* and *O. regalis* and *Anemia rotundifolia*.

Among plants popularly known as Ferns and closely allied are Selaginellas which are dealt under that heading.

The so-called Asparagus Fern is *Asparagus plumosus*.

Ficus.

Urticaceae.

Gigantic shade trees which are most welcome in very large gardens but undesirable to small ones as their roots travel a great distance and are harmful to nearby buildings as well as to the garden plants in the shrubbery and elsewhere in the ground. *F. bengalensis* is the most popular of the group. It is the Banyan tree. *F. religiosa* is the well-known Peepul tree. *F. elastica* is the India Rubber tree which is also very useful for indoor decoration as a pot plant. Also numerous other species. *Ficus repens* is a climber,

with small leaves and is very suitable for covering walls like the Ivy. Where Ficus plants grow self-sown from bird's dung on the top of old walls they should be eradicated by hacking the roots and covering them with crude oil and cement.

Filicium.

Burseraceae.

A very ornamental, fern leaved, medium sized tree, also attractive as a pot plant; raised from seed sown fresh.

Fittonia.

Acanthaceae.

Dwarf, ornamental foliage plants of Peru, of a trailing habit and suitable for rockeries in the conservatory or other moist shady situations. *F. argyroneura* has oval leaves which are white net-veined. *F. gigantea* is of a more erect habit with reddish leaves and pink net veins. Propagated by cuttings.

Flamboyante: *Poinciana.*

Flame of the Forest: *Butea frondosa*, also *Poinciana regia*.

Forget-me-not: *Myosotis.*

Fountain tree: *Spathodea.*

Four o'clock flower: *Mirabilis.*

Fox glove: *Digitalis.*

Franciscea. Syn. *Brunfelsia*. *Solanaceae*.

One of the most charming of flowering shrubs from S. America, medium height, purple flowers, very fragrant, turning white as they fade, borne in great profusion. Propagated by layer or cuttings in the rains. *F. floribunda* is the species widely cultivated. Another desirable species is *F. macrantha* (which has larger flowers) but is rather rare.

Freesia. *Iridaceae*.

Free-flowering, dwarf, cormous plants which thrive only at medium to high elevations; of easy culture. Flowers creamy white, scented. Useful as cut-flowers.

Fuchsia. *Onagraceae*.

Very ornamental flowering plants which grow only as seasonal plants on the plains if obtained from the hill stations in the middle of the cold season. Propagated by cuttings. For medium elevations there is a species, *F. procumbens*, of trailing habit, well suited for hanging baskets.

Furcraea. *Amaryllidaceae*.

F. gigantea is a useful hedge plant, formidable as a barrier along the boundary line; also cultivated as a good fibre plant. There is also a pretty variegated variety. Propagated by bulbels produced on the "pole"

when the plant is in bloom. Also effective among the cactus on the open rock garden.

Gaillardia.

Compositae.

G. picta is an easily cultivated and free flowering annual. Height 1—2 feet, colour yellow and crimson. Propagated by seed.

Galphimia.

Malpighiaceae.

G. glauca is a pretty, yellow-flowered shrub, 4—5 feet high, of extremely easy culture and sometimes used as a hedge. Nearly always in bloom. Easily raised from seed.

Gamolepis.

Compositae.

G. Tagetes is a bright little plant of dwarf, trailing habit bearing tiny flowers in great profusion and extremely useful for ribbon borders. Raised from seed.

Gardner's Garter: *Phalaris.*

Gardenia: *Cape Jasmine.*

Rubiaceae.

One of the choicest of tropical shrubs, of which there are several species. *G. florida* has dark glossy green leaves and large, pure white, fragrant flowers. Height 6—8 feet. Useful for forcing as pot plants. Propagated by cuttings. *G. lucida* is another important species.

Genista.*Leguminosae.*

G. canariensis is a flowering shrub of medium height, bearing bright, yellow, pea-shaped flowers. Useful for forcing. Thrives only at medium to high elevations. Propagated by cuttings or seed.

Geranium.*Geraniaceae.*

Universal favourites, but do not thrive on the plains where they make merely vegetative growth in the cold season but do not flower freely. A little away from the coast where there is a drier climate and at medium elevations even the ivy group grow and flower with little care. Propagated by seed or cuttings which root readily.

Gerbera.*Compositae.*

Barborton Daisy; Transvaal Daisy. One of the prettiest of perennials, especially the Jamesonii hybrids. Height 1 foot. Large star-like flowers, orange, pink or yellow. Require a deep rich soil and a sunny situation. Propagated by seed or division.

Gesnera.*Gesneriaceae.*

G. cardinalis and other species are dwarf pot plants suitable for the conservatory, but succeed with difficulty on the plains. Flowers bright red, very showy. Propagated by seed or tubers.

Gladiolus.**Iridaceae.**

Showy bulbous plants with sword-shaped leaves and large, beautiful flowers of various colours in tall spikes 2—3 feet high. On the plains, the imported corms should be started in October. There are now countless orchid-flowered hybrids, presenting every conceivable colour and shade. They should be planted in deep, rich soil, in 10 inch pots. They thrive well at medium to high elevations.

Globe-amaranth: *Gomphrena*.

Gloriosa.**Liliaceae.**

G. superba is an indigenous tuberous twiner, bearing large, showy, crimson and yellow flowers. The tubers should be started at the beginning of the rainy season and rested after flowering.

Gloxinia.**Gesneraceae.**

The florists' gloxinias which bear large flowers of dazzling brightness can be raised on the plains from imported tubers which are useful only for the first year. They should be started in rich porous soil in December in 6 inch pots or preferably pans. * The original species from which the modern gloxinias are supposed to have been derived by hybridisation and also known as *Sinningia speciosa* grows with

little care on the plains. It is treated in the same way as *Achimenes* and bears large, glossy, bronze-coloured leaves and mauve or light purple bell-shaped flowers. The scaly tubers which closely resemble a mass of caterpillars should be stored in a box of dry sand throughout the summer.

Godetia.

Onagraceae.

G. grandiflora is a popular and showy annual, with large flowers, pale lilac-purple, pink or white. Rather delicate, and suitable only for medium to high elevations. There are now also double forms. Propagated by seed.

Gold Mohur: *Poinciana regia*.

Golden rod: *Solidago*.

Goldfussia: *Strobilanthes*.

Gomphrena: *Globe amaranth.* *Amarantaceae.*

G. globosa is one of the most easily cultivated annuals; also called Bachelor's Button. Belongs to the Everlastings. Free flowering at all times of the year. Height 1 foot. Flowers deep purple in round heads. There are also white, pink and orange coloured varieties. Propagated by seed.

Graptophyllum: *Caricature Plants.* *Acanthaceae.*

G. hortense and varieties. Attractive foliage plants with bright variegation 4—5 feet, suitable for the shrubbery; also as single specimen plants in pots, of easy culture, but somewhat slow growing. Propagated by cuttings.

Grasses.*Gramineae.*

Cynodon dactylon (Doob-grass) is best suited for lawns in this climate. One of the most showy among the tall grasses is *Arundo Donax Variegata*. Some of the other ornamental grasses are: *Quaking grass (*Briza maxima*) very elegant and useful for bouquets; Ribbon grass, dwarf and brightly variegated, (*Phalaris arundinacea var. picta*), suitable for edgings and for bouquets. Hare's-tail grass (*Lagurus ovatus*), *Pampas-grass, *Gynerium argenteum*, 6 feet, with large handsome, silvery white flowering plumes; *Isolepis gracilis* a very dwarf grass suitable for the conservatory; *Oplismenus Burmanni variegatus*, a very pretty grass for hanging baskets, of trailing habit, leaves variegated white, pink and green; **Panicum plicatum*, 2—3 feet, ornamental; *Pennisetum longistylum*, a handsome Abyssinian grass, 4—5 feet.

Those marked* thrive at medium elevations and require closer attention on the plains. The Lemon-

grass (*Cymbopogon citratus*) is also sometimes cultivated as a garden plant.

Grevillea: *Silky Oak, Silver Oak.* *Proteaceae.*

G. robusta is a very ornamental Australian tree with fern-like leaves; small seedlings are also useful as pot plants for the drawing-room. Propagated by seed. There are several other species, of smaller habit, such as *G. ornithopoda*, and *G. Banksii* which are even more ornamental, but they thrive only at medium to high elevations.

Griffinia hyacinthina. *Amaryllidaceae.*

Bulbous pot plant, 1 foot, suitable for medium elevations as a conservatory plant. Bears large beautiful Amethyst-blue flowers. Propagated by division. Sometimes called "Blue amaryllis".

Gynura. *Compositae.*

G. bicolor is an easily cultivated foliage shrub, 4—5 feet, with iridescent purple leaves. Requires partial shade. Propagated by cuttings.

Gypsophila. *Caryophyllaceae.*

G. paniculata (Baby's Breath) is a very popular flowering plant, treated as an annual in this climate, its narrow grass-like leaves and small pink or white, extremely elegant flowers being much prized for mist

like effects in arranging cut flowers or as trimming in bouquets. The plant succeeds with difficulty on the plains and does not flower quite so freely as at medium to high elevations. Propagated by seed. Allied to carnations and pinks.

Haemanthus.

Amaryllidaceae.

(Blood Lily). Bulbous plants which are of the same habit as the Amaryllis but flower more freely than the latter on the plains. The bulbs remain fully dormant in the winter, losing all their foliage, and in the spring, when potted up, send up a solid scape 1—1½ feet high, on the top of which are borne numerous bright red flowers in an umbel, shaped like a ball. They next produce their foliage and should be grown on, until the leaves turn yellow towards autumn, then rested by withholding water. *H. Lindenii* bears rosy scarlet and *H. Kalbreyeri* (Syn. *multiflorus*) scarlet flowers. Increased by offsets.

Hamelia.

Rubiaceae.

H. patens is a fairly popular shrub, 6—8 feet, with attractive foliage and tiny orange-red flowers. Stands close trimming and shaping to any form. Propagated by cuttings.

Haworthia.*Liliaceae.*

H. attenuata and other species. Dwarf succulent foliage plants very much like the Aloes in habit. Leaves in a rosette. Propagated by offsets.

Hedera. *Ivy.**Araliaceae.*

H. helix is the English Ivy. Thrives with difficulty on the plains, but grows with little care at medium to high elevations. Requires shade; not particular as to soil. Propagated by cuttings with bottom heat or by layering.

Hedychium. *Greek, Sweet snow.* *Scitamineae.*

Also known as Ginger Lily, Butterfly Lily, Garland Flower and Orchid Lily. One of the choicest of flowering plants. Rhizomatous, like ginger. The flowers which are borne on terminal spikes are delicate and fragrant, 3—4 inches across. *H. coronarium* bears large snow-white flowers, which when they open in the evening fill the whole garden with delightful fragrance. This species is the one best suited for the plains. Requires a deep rich soil, and abundant water. In fact it succeeds best as a semi-aquatic. Height 3—4 feet. *H. gardnerianum* bears pale yellow flowers, but is not so free flowering as the other species. *H. angustifolium* (*coccineum*?), some-

what taller in habit than the preceding, bears much larger heads of scarlet flowers which are somewhat smaller. Not conspicuous for its fragrance but very showy. This species thrives well only under subtropical conditions. *Hedychiums* should be cultivated in the same way as *Cannas*. The roots should be rested for some time after blooming. Propagated by division.

Helianthus: *Sunflower.*

Compositae.

One of the commonest of annuals, and of extremely easy culture. Can be grown all the year round. *H. annuus* and *H. giganteus* are the species largely cultivated. The Russian sunflower bears gigantic blooms even 18 inches or more across. Height 6 feet or more. A gross feeder. There are also very dwarf, small-flowered varieties of *H. cucurbitifolius* which are very useful for cut flowers. Propagated by seed. There is also a perennial species (*H. multiflorus*) which bears single yellow flowers like Marguerites. Propagated by cuttings.

Helichrysum.

Compositae.

Annuals of the "Everlastings" class. Easily raised from seed. The bright multi-coloured flowers retain their shape and brightness until long after they are cut and dried. Thrive well at medium elevations, but seldom succeed on the plains.

Heliconia.*Musaceae.*

Foliage plants, 4—6 feet, somewhat resembling the banana plants. There are numerous species, of which *H. angustifolia*, *H. braziliensis*, *H. insignis* and *H. spectabilis* are desirable. Treatment same as for Marantas. Propagated by suckers. *H. illustris* is somewhat sub-tropical in its habit.

Hamiltonia.*Rubiaceae.*

A border shrub attractive in bloom in the cold season, with its large clusters of bright little flowers which are mildly fragrant. *H. azurea* bears bluish pink flowers, and *H. suaveolens* has flowers of a much lighter shade, nearly white. Thrives in any garden soil with ordinary care. The habit of these plants is somewhat straggly. It is therefore advisable to prune severely the branches that have finished flowering each season to correct the shape. Propagated by cuttings in the rains.

Heliotrope: *Heliotropium.**Boraginaceae.*

A universal favourite because of the delicate fragrance of its flowers and equally characteristic colour. Best treated as an annual in this climate. Although sub-tropical in its requirements, *H. peruvianum* flowers fairly satisfactorily on the plains; the flowers are borne in close terminal cymes. The several varieties range

in colour from white to pale purple. Best treated as pot plants; usually grown on single stems by rubbing off the side buds until the desired height of about 3 feet (on the plains) is reached. Propagated by seed.

Hemerocallis.

Liliaceae.

Bulbous plants, with showy flowers, suitable for sub-tropical conditions. *H. aurantiaca* is the Golden Lily. Large, bright, orange flowers, fragrant. *H. fulva* is the Lemon Lily bearing yellow flowers. On the plains the plants grow with little care but flower only occasionally. Propagated by division.

Henna: *Lawsonia.*

Hibiscus: *Rose-Mallow.*

Malvaceae.

A large group of gorgeous, flowering plants, 4—8 feet, which are of extremely easy culture. There are several species of which *H. rosa sinensis* is the most popular. It contains numerous varieties, with large single or full double flowers, 4—6 inches across, crimson, scarlet, rose-pink, salmon, salmon-yellow, salmon-red, orange, etc. *H. schizopetalus* is a tall shrub, bearing large, red, pendulous flowers with recurved petals deeply cut. *H. syriacus* offers a distinctly different type of flowers which are produced only late in the summer. Of the numerous varieties those which

bear pure white and bluish-purple flowers, single or double, thrive on the plains. All propagated easily by cuttings. The plants should be started on fresh roots when they become leggy.

Higginsia: *Hoffmannia*.

Hippeastrum.

Amaryllidaceae.

Showy bulbous plants, closely allied to the *Amaryllis* and requiring the same treatment. *H. equestre* with its numerous hybrids and varieties thrive at medium elevations. A variety known as "Mrs. Garfield" is very distinctive and flowers regularly as a conservatory plant. The leaves have a band of pure white along the mid-rib, and the flowers are large rose-pink.

Hiptage.

Malpighiaceae.

H. madablota (a corruption of the Sanskrit name *madhavi lata*) is an indigenous shrub of classical fame. It is of scandent habit and very attractive in bloom in the shrubbery with its yellowish white, delicately fragrant trusses of flowers; propagated by seed (which is produced in great abundance), or by layering.

Hoffmannia: *Higginsia*.

Rubiaceae.

Attractive foliage plants of the West Indies suitable for the conservatory. *H. discolor* has large, satin-

bronze leaves. Height 1½ feet. *H. Ghiesbreghtii* has brighter leaves, more richly variegated. The compost should be mixed with an equal quantity of old mortar. Easily raised from cuttings.

Hollyhock: *Althæa rosea*.

Holmskioldia: *Parasol Flower*. *Verbenaceae*.

H. sanguinea is a pretty flowering shrub, 6—8 feet, bearing in great profusion orange red flowers. Thrives with little care. Propagated by cuttings.

Honeysuckle: *Lonicera*.

Hoya. *Asclepiadaceae*.

H. carnosa, (Wax plant) is an attractive climber, of moderate habit, which bears showy flowers, white with pink centre in umbel-like clusters; needs a light, porous soil. There are numerous other species suited to medium elevations. *H. imperialis* is one of the best. Propagated by cuttings or layering.

Hydrangea. *Saxifragaceae*.

These beautiful flowering shrubs make only rank vegetative growth on the plains, but seldom come into bloom. Well suited for the hill stations. Of the several species the *H. hortensia* group seems best suited for medium elevations. Bears large heads

(corymbs) of bright blue or pink flowers. After blooming the old wood should be cut back to one to three joints or nodes. Propagated by cuttings or division.

Hymenocallis.

Amaryllidaceae.

Spider Lily. Showy bulbous plants of the West Indies, bearing fragrant white flowers in large clusters on a stout stalk. Closely allied to crinums and requiring the same treatment. *H. ovata*, *H. tenuiflora*, *H. amœna* are some of the important species. Propagated by offsets.

Iberis: Candytuft.

Cruciferae.

Very pretty flowering plants of dwarf habit suitable for beds and edgings, also as pot plants and for cut flowers. The flowers appear in tufts and one of the species was introduced from Candia. Hence the name Candytuft. The annual kinds with a little additional care in their cultivation succeed well also on the plains. At medium elevations they are of easiest culture. The several species are offered by florists under various trade names, such as 'Snow flake,' 'White spiral,' which are forms *I. amara*. There is also a sweet-scented, white species, *I. odorata*. The colour ranges from white to lilac and purple. Propagated by

seed. Best sown where the plants are required to flower, the seedlings being thinned out after they are fairly established.

Ice plant: *Mesembryanthemum*.

Imantophyllum: *Clivia*.

Impatiens.

Geraniaceae.

I. Sultani, etc., Perennial Balsam, Very pretty and free flowering plants of the easiest culture. Remain loaded with bloom throughout the cold season, when they require partial shade, and in the summer, good protection from the sun. Every little bit of a branch put down in sand roots in less than a week. The flowers are various shades of pink, salmon and red. Height 1—1½ feet. *I. flaccida* has a white flowered form 'alba' which is of a trailing habit. *I. repens* bears bright yellow flowers with reddish stems. Both suitable for pans and hanging baskets. There should be plentiful duplicates to preserve particular shades, as the majority of plants damp off in the summer. Plants started on fresh roots in March and later are safer, as also late cuttings left in a pan of sand in the shade. One little cutting saved until October would provide all the material needed for the succeeding season. Plants may also be raised from seed which is produced plen-

tifully, except in the case of *I. repens*. *Impatiens Balsamina* is the annual Balsam—see Balsam.

Indian Lilac: *Lagerstræmia indica*.

Indian Shot: *Canna indica*.

Inga: See *Pithecolobium*.

Ipmoea.

Convolvulaceae.

A very large group of highly ornamental flowering climbers including Morning Glory, Moon Flower, etc., nearly all of which thrive splendidly in this climate and are of quick growth. *I. Horsfalliæ* (var. *Briggsii*) is perhaps the most showy in this group. A vigorous and extensive climber, it is gorgeous in bloom through the greater part of the year with several thousands of flowers at a time, large, bell-shaped, and of a rich magenta-crimson. It is ideally suited for an arch. Not known to produce seed in this climate. Propagated by cuttings with bottom heat or by layering. A gross feeder in active growing condition. *I. Learii*, Blue Dawn Flower, sometimes called Morning Glory, is also a most easily cultivated climber and very showy in the rainy and cold seasons, with its numerous large bluish-purple flowers, useful for covering unsightly corners. *I. tricolor* is an extremely showy annual climber, as also *I. rubro-cærulea* which is included in

seedsmen's catalogues as *I. Heavenly Blue*. *I. carnea* is a shrubby climber with large pale pink flowers and suitable for covering waste places, embankments, etc. *I. palmata* (Railway creeper) is a profuse bloomer with purplish flowers. *I. Quamoclit* is an annual with finely divided leaves and small scarlet flowers. There is also a white flowered variety. *I. tuberosa* is a vigorous, yellow flowered species. *I. Bona-nox* is the Moon Flower with its very large saucer-shaped, fragrant flowers, which open in the night. Propagate by seed or cuttings.

Iresine: Syn. *Achyranthes*. *Amarantaceae*.

I. Herbstii is an edging plant with bright crimson coppery leaves with whitish nerves. Thrives under sub-tropical conditions. Easily propagated by cuttings.

Iris: *Fleur-de-lis*. *Iridaceae*.

A large group of very showy rhizomatous plants mostly bearing rich blue and purple flowers, but suited only to temperate and sub-tropical conditions.

Isoloma. *Gesneraceae*.

I. bogotense is an elegant, dwarf, pot plant, suitable also for the shaded rockeries and conservatories. Bright velvety leaves and showy flowers. Treated in

the same way as *Achimenes*. Thrives well at medium elevations. Propagated by seed, cuttings or tubers.

Ivy: *Hedera helix*.

Ixora.

Rubiaceae.

Flowering shrubs of rare merit in a tropical garden. There are numerous species and varieties. The flowers are well displayed in dense terminal heads (corymbs) and present a wide range of colour, except shades of blue and purple. They are not particular as to soil. Most of the varieties flower all the year round and the flowers remain fresh for many days even under a scorching sun. *I. parviflora* is a tall shrub, or dwarf tree bearing pure white flowers; *I. rosea*, 3—4 feet, rose-pink, *I. macrothyrsa* is large leaved, 5—6 feet, with large and lasting heads of orange-scarlet. All these flower only seasonally, sometimes twice a year early in the spring and again late in the summer. *I. coccinea* is a tall shrub, somewhat straggly in habit, but remains loaded with its deep scarlet flowers all the twelve months of the year. *I. flava* is a scandent shrub with pure yellow flowers, somewhat slow growing, but will rise to 20 feet or more on a trellis, and remain constantly in bloom. *I. stricta* is a dwarf variety seldom more than 2 feet high, which is small leaved and exceedingly floriferous. Very suitable for

low hedges. The flowers are orange-scarlet. Several hybrids of an orange-yellow, scarlet-orange, or salmon-red, but all closely resembling each other, are of a somewhat dwarf habit. Chief among these are Duffii, Williamsii and Prince of Orange (one of the best Kew hybrids). *I. Griffithii* (Syn. *I. hydrangeae formis*) is perhaps the showiest of all Ixoras. Height 4--5 feet. Its immense flowers heads are a bright orange-red colour and 15--20 are borne at a time on a plant hardly 18 inches high. Except for its somewhat loud tropical colour, it is very much like a Hydrangea bush forced under glass. All the above are propagated by cuttings in the rains.

Jacaranda.

Bignoniaceae.

J. mimosæfolia is a beautiful tree, remarkable alike for its elegant mimosa-like leaves and its large showy panicles of bluish-purple, bell-shaped flowers. The young seedlings are also useful as ornamental pot plants. Jacaranda thrives well at medium elevations, but grows more slowly and flowers only occasionally on the plains. Propagated by seed.

Jacobinia.

Acanthaceae.

Flowering shrubs of medium height closely allied to Justicias and requiring the same treatment. *J. carnea* is one of the most showy and flowers almost all

the year round in spike-like clusters which are flesh coloured. *J. coccinea* bears crimson flowers, only in the summer. *J. aurantiaca* produces orange yellow flowers. For best results, the plants should be started afresh from cuttings every year after blooming.

Jacquemontia.

Convolvulaceae.

One of the prettiest of tropical climbers and thrives splendidly on the plains. *J. pentantha* (Syn. *J. violacea*) bears, in dense clusters, beautiful azure-blue flowers. Same treatment as for Ipomoea. Propagated by cuttings in the rains or by layering.

Jasminum: *Jasmine.*

Oliaceae.

A large genus of shrubs and climbers well known for the rich fragrance of their flowers. The most important species are: *J. Sambac.* (Arabian Jasmine) of which the variety with shrubby habit and bearing large globose full double flowers is known as the Grand Duke. *J. officinalis* and *J. grandiflorum* are creepers which bear abundant, very fragrant, single flowers, in terminal clusters. *J. gracillimum* is a scandent shrub with small glossy green leaves and flowers in dense hanging heads, white, very fragrant. This has the habit of sending up sucker-like branches from near the ground. *J. pubescens* is another very floriferous species. *J. humile*, *J. chrysantha* and *J. primulinum*

are bright, yellow-flowered species suited to medium elevations. They seldom flower on the plains except the last mentioned. All the Jasmines are easily propagated by cuttings in the rains. They can be forced into bloom by resting the plants by means of withholding water and causing the plant to drop all its leaves and then watering again copiously. Defoliating has also nearly the same effect, the main object being to subdue the vegetative vigour of the plant and induce as many short spurs or side growths as possible. They also require a deep rich soil and heavy manuring for a succession of bloom.

Jatropha.

Euphorbiaceae.

J. multifida (Coral Plant) is an attractive shrub, 8—10 feet, with large palmately cut leaves and scarlet flowers. *J. podagrica* has large palmate-peltate leaves, orange-red flowers, and gouty-looking stem. *J. pandurifolia* has fiddle shaped leaves and rose-pink flowers. Height 3—4 feet. All these species are easily propagated by cuttings as well as by seed.

Jonesia: Saraca.

Justicia.

Acanthaceae.

Flowering shrubs of medium height with large leaves and showy terminal clusters of red, or yellow

flowers. The name is often used as a syn. for *Jacobinia*, as the difference between them is one of academic interest. Propagated easily by cuttings. The plants thrive with little care in almost any soil.

Kaempferia.

Zingiberaceae.

Very ornamental dwarf pot plants, rhizomatous and closely allied to *Hedychium*. *K. rotunda* bears exquisitely sweet-scented and crocus-like flowers which are of a delicate purplish colour. *K. galanga* has roundish leaves and white flowers with two purple spots. *K. Kirkii*, *K. Gilbertii* and *K. Parishii* are other species all equally desirable. The plants die down in the winter and flower in the spring. *K. rotunda* bears its flowers before the leaves appear. Propagated by division.

Kalanchoe.

Crassulaceae.

Dwarf, succulent, flowering shrubs suitable for rockeries, along with cactus, etc. Flowers often showy in terminal clusters. *K. coccinea*, *K. Kirkii*, *K. flammea* and *K. crenata* are some of the important species bearing scarlet, yellow or orange flowers. Require a full sun, and thorough drainage. Easily propagated by cuttings.

Kigelia: *Sausage Tree.*

Bignoniaceae.

K. pinnata is an excellent shade tree from Australia, tall and of broad spreading habit, bearing large claret-coloured flowers in panicles suspended by long cord-like stalks succeeded by equally remarkable, large sausage-like fruits. A desirable tree for large gardens. Propagated by seed.

Kniphofia: Syn. *Tritoma.*

Liliaceae.

Red-Hot-Poker Plant, Torch Lily.

K. alooides (Syn. *Tritoma uvaria*) is a showy perennial bearing long erect spikes of scarlet flowers. Suited to sub-tropical conditions. Propagated by division.

Kopsia.

Apocynaceae.

K. fruticosa is a showy shrub bearing all the year round fairly large, bright pink, red-centred flowers. Thrives with little care in any soil. Propagated by cuttings.

Lagerstroemia.

Lythraceae.

A very showy-flowered group of shrubs and trees. *L. Flos-reginæ* (Queen's Flower; Pride of India) is one of the most gorgeous trees in bloom. Bears large panicles of big rose-purple flowers. Medium sized. Propagated by seed. *L. indica* (crepe myrtle) is a tall

shrub, 6—10 feet, bearing large sprays of lilac and magenta-coloured flowers in great profusion. The petals are crinkled or fringed. The shades vary considerably. There is also a pure white-flowered form, and several other varieties. Propagated by cuttings. Suitable for the shrubbery, hedge or for screen planting. It is the young shoots of the current season's growth that flower. Moderate pruning should be done when the plant is nearly leafless, to induce plenty of new flowering shoots.

Lantana.

Verbenaceae.

Medium sized, prickly, flowering shrubs extensively used for hedges. *L. Camara*, *L. aculeata*, flowers orange-red, *L. crocea*, yellow, *L. eldorado*, white with lemon eye, *L. nivea*, pure white, *L. Sollowiana*, dwarf, trailing habit, lilac. The white-flowered species in particular makes very attractive standards. Thrives even in poor soil. Propagated by cuttings in the rains.

Lapageria.

Liliaceae.

L. rosea is a climber of rare merit belonging to Chili, with large and showy, bell-shaped flowers which are rose-crimson with lighter spots. It is rather difficult to grow and suited only to sub-tropical conditions. Propagated by layering.

Larkspur: *Delphinium*.

Lathyrus.

Leguminosae.

L. odoratus is the Sweet Pea. One of the most charming of annuals, some dwarf and erect, others dwarf climbers. On the plains near the coast they are extremely difficult to grow. At medium elevations and in the interior they flower profusely. Large, elegant and fragrant flowers in all colours and shades. Very suitable for decoration indoors. Propagated by seed. For the lower elevations, acclimatised seed should be preferred, as it produces plants which are free flowering. The plants do not bear transplanting well. The seed is therefore sown in pots or in the ground where the plants are to blossom.

Lawsonia.

Lythraceae.

Henna. Tree Mignonette. L. alba is a shrub, 5—6 feet, with myrtle-like foliage and bearing fragrant, creamy white flowers. Thrives with little care. Propagated by seed or cuttings. Suitable for hedges.

Leea.

Vitaceae.

Showy shrubs valued for their ornamental foliage. *L. amabilis* has beautiful, silvery vine-like foliage. *L. sanguinea* bears beautiful crimson-red flowers in large cymes. Thrives at the higher elevations. Propagated by layering.

Leptosiphon.*Polemoniaceae.*

A genus of very pretty annuals bearing large trusses of flowers, white, yellow, rose or purple. The foliage is also attractive. Suited to medium elevations. Should be sown where the plants are required to blossom. *L. densiflorus* bears purplish flowers, var. *albus*, pure white, *L. luteus*, yellow. Also numerous other varieties. Propagated by seed in October at the lower elevations.

Linaria.*Scrophulariaceae.*

Toad-flax. A genus of showy annuals easily cultivated at medium elevations. Propagated by seed. On the plains they do not flower quite freely. The seed which is very minute, should be sown in finely-sifted soil. The flowers are effective only when massed.

Linum.*Linaceae.*

L. grandiflorum or flowering flax is an annual containing several varieties, with red or blue flowers in various shades. Propagated by seed. Suited to the medium elevations, but with good care, succeeds also on the plains.

Linum trigynum: *Reinwardtia.*

Lippia.*Verbenaceae.*

L. citriodora (*Aloysia citriodora*); Lemon scented verben. A very desirable shrub which grows with

considerable difficulty on the plains, where it is best treated as a pot plant. Well suited to medium elevations. Propagated by cuttings in the cold season with bottom heat.

Lobelia.

Campanulaceae.

A most charming group of perennials and annuals, which are all best treated as annuals in this climate. *L. erinus* is one of the best edgings under sub-tropical conditions, also very effective in hanging baskets. *L. cardinalis* is of erect growth, bronze coloured foliage and scarlet flowers. There are several other species which are all equally showy, but on the plains the plants grow but, do not flower satisfactorily. Propagated by seed. *L. longiflora* is a white flowered species which is self-sown in many gardens and often becomes a weed.

Lonicera: *Honeysuckle.*

Caprifoliaceae.

A large group of most desirable plants, some shrubs and others climbers, of which only *L. japonica* thrives well even on the plains. It is a climber of light growth bearing large terminal clusters of very fragrant, white flowers changing to yellow on short spurs from the old growth. Propagated by cuttings of moderately young wood or by layering. *L. Hildebrandiana* is an extensive climber with large yellow flowers. Succeeds only at the higher elevations. *L. sempervirens*

(Trumpet Honeysuckle) with leaves silvery underneath, bears coral-red flowers. Propagated by cuttings or layers.

Lotus: *Nymphaea*; *Nelumbium*.

Love-lies-bleeding: *Amarantus caudatus*.

Lupinus. *Leguminosae*.

Lupins. These showy favourites of the temperate climate can be grown successfully only at the higher elevations. *L. hirsutus*, the blue Lupin, and *L. luteus* the yellow Lupin, are the two typical species. The seedlings do not bear transplanting well. For medium elevations, acclimatised seed obtained from the hills should be preferred to the imported kind.

Macrozamia. *Cycadaceae*.

A genus of noble looking foliage plants very much like Cycads in appearance and requiring the same treatment. Very effective in large tubs, as single specimens. *M. Fraserii*, *M. plumosa* are two important species. Propagated by suckers or seed.

Madras Thorn: *Pithecolobium dulce*.

Magnolia. *Magnoliaceae*.

A most desirable group of trees and shrubs which succeed with great difficulty on the plains. They

grow luxuriantly under sub-tropical conditions at an elevation of 3,000 feet and upwards. *M. grandiflora* is one of the best species, with large glossy green, laurel-like leaves, and flowers as large and gorgeous as the Lotus, very fragrant and lasting.

At the lower elevations it remains a shrub and flowers occasionally, but is well worth cultivating for its foliage alone. It should be planted in the ground in partial shade on the south side of taller trees where it is protected from the full sun in the summer, and gets the full benefit of the sun in the winter. Care should be taken that the roots of neighbouring trees do not swamp the hole in which it is planted. *M. splendens* is fairly well suited to the lower elevations. Flowers white. *M. pumila* is a shrub which stands tropical conditions better than most other species. It bears fragrant, white flowers, $1\frac{1}{4}$ inch across. At the higher elevations, *M. stellata*, a dwarf, large white-flowered shrub, is very effective. Propagated by layering, or 'gootee', or seed, but layering and 'gootee' give better results, as the plants flower while still small.

Mahogany: *Swietenia*.

Malpighia.

Malpighiaceae.

M. glabra, *Barbados Cherry*, is a slow growing medium sized tree which bears beautiful deep red

cherry like fruits with a fine flavour and used for jams and preserves, *M. coccigera* is a dwarf shrub with holly like leaves and very useful as an edging for paths, borders, etc. Propagated by seed or cuttings which succeed best when placed close to the edge of the pot.

Mammillaria: *Nipple cactus.* *Cactaceae.*

A large genus of globular, dwarf, spiny cactus suitable for the open rockery. Flowers, large and showy. *M. longimamma*, *M. tenuis*, *M. coronaria* are some of the important species. Propagated by offsets.

Mandevilla: *Chilean Jasmine.* *Apocynaceae.*

M. suaveolens is a climber with large, white or blush, fragrant flowers, each 2 inches across in racemes each containing about 8 to 10. Suitable for trellis, etc. Thrives at medium elevations. Propagated by cuttings.

Manettia. *Rubiaceae.*

M. bicolor is a dwarf plant of trailing habit bearing bright red and yellow flowers, and sometimes used for made up baskets. On the plains it requires the shelter of a conservatory. Propagated by cuttings.

Maranta.*Marantaceae.*

A very ornamental class of foliage plants of dwarf to medium habit with handsome markings of the leaves and largely grown as pot plants. These are started by division of the crowns when they start into growth in the rainy season, the old leaves are trimmed back to remove the portions damaged during the summer, and potted up in a compost rich in leaf-mould rendered lighter by the addition of a third in quantity of charcoal and sand. They need plenty of water during growth, but the drainage must also be good. The foliage should be frequently syringed to keep the foliage healthy and free from insects. There are numerous species and varieties; many of the names are synonyms for Calatheas. *M. splendida*, *M. leuconceura*, var. *Massangeana*, *M. bicolor* and *M. zebrina* are some of the most showy in this class.

Margosa Tree: *Azadirachta indica*.

Marguerites: *Chrysanthemum frutescens*.

Marigold.*Compositae.*

A popular name for some of the most easily cultivated annuals which bloom throughout the greater part of the year. The French *Marigold* is *Tagetes patula*: The African, *Tagetes erecta*. The African Marigolds are mostly orange or lemon coloured. The French

Marigolds red, orange or yellow, with blotches or stripes of deep brown. The *Cape Marigold* is *Dimorphotheca* which does not thrive easily on the plains. The *Fig Marigold* is *Mesembryanthemum* which is suited to sub-tropical conditions. All the above are easily raised from seed.

Marvel-of-peru: *Mirabilis Jalapa*.

Matthiola: *Stock*.

Cruciferae.

These popular, fragrant, and mostly deep purple garden flowers do not thrive on the plains. The common stock, *M. incana*, and the ten-weeks-stock, *M. incana* var. *annua*, are easily raised from seed at elevations of 3,000 feet and upwards. Likewise the Virginian stock, *Malcomia moritima*.

Maurandia.

Scrophulariaceae.

Showy climbers suited to the higher elevations. *M. Barclaiana* bears long violet purple flowers, *M. erubescens*, rosy pink. Propagated by seed or cuttings.

Medinilla.

Melastomaceae.

One of the most striking and handsome among flowering plants. *M. magnifica* is considered one of the most gorgeous of tropical plants. It has large, glossy leaves and rose-red flowers each about an inch

across on a pendulous panicle about a foot long bearing nearly a 100 flowers. *M. Teysmannii* bears even larger, creamy white flowers. *M. speciosa* bears crimson flowers. Rather slow growing. Height 5—6 feet. Propagated by cuttings of moderately firm wood with bottom heat in a glass frame. Well suited to medium elevations. Requires partial shade in the summer.

Melastoma.

Melastomaceae.

A fairly showy shrub of medium height with purplish flowers, and well suited to medium elevations. *M. malabathricum*, known as the Indian Rhododendron, is best handled as a pot plant on the plains. Propagated by seed.

Melia.

Meliaceae.

M. Azadirach, Persian lilac, is an ornamental medium sized tree bearing pale lilac, fragrant flowers in large panicles. Propagated by seed.

Mesembryanthemum.

Aizoaceae.

Fig Marigold. Dwarf succulent plants, with red, white or yellow flowers somewhat like *Portulaca*, and best treated as annuals in pots. Propagated by cuttings or by seed which is very minute. The roots should have good drainage, and a light sandy compost mixed

with small pieces of brick. *M. tricolor* and numerous other species. All thrive well at medium elevations.

Mesua.

Guttiferae.

M. ferrea, Ceylon Iron wood. A slow growing, moderate sized, ornamental tree with handsome foliage, and large white fragrant flowers. Propagated by seed which must be sown where the tree is to remain as the seedlings do not transplant well.

Meyenia: *Thunbergia*.

Michelia.

Magnoliaceae.

M. Champaca is a tall indigenous tree with handsome foliage and yellow or orange-red flowers which are very strong scented. Propagated by seed.

Mignonette: *Reseda odorata*.

Resedaceae.

This universal favourite which is noted for the fragrance of its flowers succeeds as a cold season annual on the plains. Height 1—1½ feet. Propagated by seed which, in this case, is best sown in the pots in which the plants are to flower. After the seeds have germinated only 3 strong, thrifty seedlings are retained in each 10-inch pot and the others removed. When the plants are fairly well developed, they should receive wire supports. The side growths near the top of the stem should be removed when the flower heads

appear. The bottom side shoots, 3 or 4, which are the strongest, should be retained on each plant for a second crop. The plants require partial shade during midday and thrive best in a compost to which old mortar has been added.

Millingtonia.

Bignoniaceae.

M. hortensis, Indian cork tree, is a large tree of dense and rapid growth, of graceful habit, and produces immense quantities of white, rather strong-scented flowers twice a year (November and June) which lie spread like a carpet under the tree. Propagated by suckers or by seed.

Mimulus:

Scrophulariaceae.

M. maculosus is a bright annual "Monkey flower," dwarf, with pale yellow flowers blotched with brown. Propagated by seed. Not well suited to the plains.

Mina lobata: *Ipomoea versicolor.* *Convolvulaceae.*

A fairly popular annual climber raised from seed.

Mirabilis.

Nyctaginaceae.

M. Jalapa, Four o'clock Flower, is a perennial shrub, 1½—2 feet, bearing in great profusion red, white, pink, orange or yellow flowers sometimes with blotches of another colour, which open at about 4 o'clock but do not last beyond the night. Easily raised

from seed. Produces also tubers. *M. longiflora* (which bears sweet-scented flowers) and *M. multiflora*, with purple flowers, are not well suited to the plains.

Monstera.

Araceae.

M. deliciosa is an orchid-like creeper, with very large, glossy green, perforated leaves, which is often very appropriate as a covering to the bare trunk of an old massive tree. Requires plenty of water. Propagated by cuttings like an orchid.

Montanoa.

Compositae.

M. bipinnatifida, Tree Daisy, is a tall shrub, about 12 feet, bearing white daisy-like flowers in great profusion in the cold season. Thrives very well at medium elevations. Propagated by cuttings.

Moon Flower: *Ipomæa Bona nox.*

Morning Glory: *Ipomæa.*

Muraya.

Rutaceae.

M. exotica, China Box, is a large bushy shrub, 12—15 feet, with deep glossy green leaves, like Box, and bearing large clusters of white, very fragrant flowers. A very desirable shrub. Can be trimmed to any desired shape. Propagated by seed, or by cuttings with bottom heat.

Musa.*Musaceae.*

M. coccinea is a dwarf ornamental plant, 4—5 feet, very much like a young banana tree, to which it is closely allied, and produces a spike which is erect, dense, about 1 foot long, with brilliant scarlet bracts tipped with yellow, very showy. Propagated by suckers, which flower in 10-inch pots if well fed.

Mussaenda.*Rubiaceae.*

Ornamental shrubs of medium height, which are remarkable for the bright coloration of one of the calyx lobes which is much enlarged. *M. luteola* bears small bright yellow flowers, and the enlarged sepal is lemon yellow. A plant which is useful for the shrubbery and which grows with little care. *M. frondosa* has a larger sepal. *M. erythrophylla* is perhaps the most showy in this group. The enlarged sepals are a dazzling crimson-scarlet, and the flowers are fairly showy. Taller in habit than the other two, and somewhat more difficult to grow on the plains but is well worth all the care it needs. Propagated by cuttings or by layering.

Myosotis: *Forget-me-not.**Boraginaceae.*

Among the prettiest and most popular plants of the temperate climate. They thrive here only at the higher elevations from 3,000 feet upwards. Dwarf

plants mostly with pretty blue flowers with golden-eye. *M. scorpioides* is the true Forget-me-not of Europe. There are numerous other species, and florists' varieties, such as Royal Blue. Propagated by seed or sometimes by cuttings.

Myrtle: *Myrtus Communis.* *Myrtaceae.*

A well-known shrub of S. Europe, 6—8 feet, with small white flowers. Thrives with little care at medium elevations. Propagated by cuttings.

Nandina. *Berberidaceae.*

N. domestica is a very pretty shrub, 4—6 feet, remarkable for its dense bushy growth and small extremely graceful bronze-tinted bipinnate leaves. On the plains it does not grow quite so satisfactorily as at medium elevations. Requires partial shade in the summer.

Narcissus. *Amaryllidaceae.*

These well-known bulbous plants can thrive only at the higher elevations. At medium elevations, imported bulbs produce fairly satisfactory results. The mature bulbs should be timed to arrive from Europe about the end of October, when they should be potted up firmly in a rich compost in about 6-inch pots, watered thoroughly once and placed in a cool *dark* room. If

there is a cellar in which the cold night air can be arrested, so much the better. Subsequent watering should be done only to prevent the soil from drying up completely. Watering must not be frequent but thorough each time it is done. The main object is to induce the flower stalk to push up before the leaves appear, as otherwise the growth of the flower bud is inhibited. When the flower stalk appears, the pot should be moved into normal light but protected from the direct sun, and as growth increases water should be given more plentifully. It is useless to try to preserve the same bulbs for the succeeding season.

Nasturtium: *Tropaeolum*.

Nelumbium. *Nymphaeaceae*.

One of the finest of tropical water plants, which can be grown successfully even in small ponds or cisterns. *N. speciosum* is the Lotus Lily: the sacred bean of Egypt. It has roundish peltate leaves, and large, fragrant, white, pink or yellow flowers. Propagated by seed or by tubers.

Nemesia. *Scrophulariaceae*.

N. strumosa is an annual of dwarf habit, 1 foot, with large showy white, yellow or crimson flowers. Suited to medium elevations. Propagated by seed.

Nemophila.*Hydrophyllaceæ.*

Annual of dwarf, compact habit, producing abundant, showy bell-shaped flowers. *N. insignis*, Baby Blue-Eyes, bears bright clear blue flowers. Propagated by seed. Thrives at the higher elevations.

Nepenthes.*Nepenthaceæ.*

The Pitcher Plant. Orchid-like in habit. The leaf-tips are formed into pitchers, which secrete a honeyed juice which attracts insects. They crawl in, get caught and die and are digested by the plant. Requires a porous soil and a moist shady situation. Propagated by cuttings. The plant is more of a curiosity than an ornament. *N. distillatoria*, a species from Ceylon, is commonly cultivated in conservatories.

Nerine.*Amaryllidaceæ.*

Very showy bulbous plants, very much like Amaryllis in habit, and bearing large, numerous funnel formed flowers, in an umbel, in shades of red and pink (varying to white). *N. sarniensis* (Guernsey lily) and numerous other species and hybrids are suitable for the higher elevations. After flowering late in the summer, they should be fed well and given plenty of water until the leaves turn yellow, when they should be rested completely for about 3 months. Propagated by offsets.

Nerium: *Oleander*. *Rose Bay*. *Apocynaceae*.

One of the most beautiful and free flowering plants for a tropical garden. *N. Oleander* forms graceful spreading bushes, 8—12 feet high, producing large terminal clusters of crimson, pink or white flowers, with many intermediate shades, in single and double forms. *N. odorum* is the sweet-scented Oleander, somewhat less robust than the preceding species. A most desirable group of plants. Propagated by layers or cuttings in the rains.

Nicotiana: *Flowering tobacco*. *Solanaceae*.

N. Tabacum, etc. are easily cultivated annuals, 2—3 feet high, producing numerous showy flowers which are white, pink, etc. *N. alata*, var. *grandiflora* bears larged sweet-scented flowers. Raised from seed.

Nierembergia: *Cup Flower*. *Solanaceae*.

N. gracilis is a showy flowering shrub, 2 feet, suitable for the higher elevations. Flowers white tinged with purple with yellow throat. Propagated by cuttings or seed.

Nigella: *Love-in-a-mist*. *Ranunculaceae*.

Also called Fennel-flower. *Devil-in-a-Bush*. *N. damascena* is a very pretty annual, 1—1½ feet, with finely cut, feathery foliage and large white or blue

flowers. Var. *nana* is a dwarf form. Suitable for sub-tropical conditions. Propagated by seed.

Nilgiri Grass: *Lobelia succulenta*.

Nipa: *Water Palm*. *Palmaceae*.

A graceful palm that will grow in brackish water or a pond. *N. fruticans* grows to 8—10 feet. Propagated by seed.

Nyctanthes. *Nyctanthaceae*.

N. arbor-tristis is a tall bushy shrub or medium sized tree popular in Indian gardens because of its strong scented flowers which open in the night and spread their fragrance to a great distance. The corolla is pure white and the tube a deep coral red. Also known as night flowering jasmine. Propagated by seed or by cuttings in the rains.

Nycteria. *Scrophulariaceae*.

Dwarf annuals with terminal heads of small but very bright and showy flowers in various colours. Suitable for medium elevations. Propagated by seed.

Nymphaea. *Nymphaeaceae*.

Water Lily. Aquatic plants of unrivalled beauty in a tropical garden. They are easy to cultivate in this climate and almost indispensable for a rich landscape effect. They can be grown in open ponds or

almost equally well either in a small cement-plastered cistern in a conservatory, or in a tub placed in a fountain basin. *N. Lotus* has large roundish floating leaves, and flowers pale pink to bright crimson which open in the night. *N. stellata* bears somewhat smaller, pale blue or purplish flowers. *N. lutea* produces large, showy, yellow flowers. *N. sulphurea*, pale to deep yellow. Propagated by seed or more frequently by tubers.

Ochna.

Ochnaceae.

Flowering plants suitable for the shrubbery. *O. squarrosa* and *O. Wightiana*, two species in cultivation, are medium to tall, both bearing bright yellow flowers. Propagated by seed or cuttings.

Ochrocarpos.

Guttiferae.

O. obovalis is a medium sized flowering tree with large laurel-like leaves and very fragrant flowers (even when dry). Very slow growing. Propagated by seed.

Oenothera.

Onagraceae.

Evening Primrose. *O. biennis* and other species are useful border plants much prized for their showy bright yellow, rose or white flowers, 1—1½ feet. Suitable for sub-tropical conditions. Propagated by seed.

Oleander: Nerium.

Oncoba.*Flacourtiaceae.*

O. spinosa is a tall shrub or medium sized tree which bears large, showy, white, fragrant flowers with numerous yellow stamens. Propagated by cuttings. Thrives with little care. Useful as a barrier on the boundary line. It is somewhat thorny.

Ophiopogon.*Liliaceae.*

Dwarf pot plants with handsome grass-like foliage and suitable for the conservatory, verandah or other shaded situation. They bear small bluish or white flowers under sub-tropical conditions but are seldom known to flower on the plains. *O. intermedius* and *O. japonicus* are the species usually cultivated. Propagated by division.

Orchids.*Orchidaceae.*

A large family of most highly prized plants because of their showy, unusual and interesting flowers which have a marvellous range of form and colour and which remain fresh for a long time, a month or more in some cases. In growing orchids it is well to understand the limitations as well as the possibilities of successfully cultivating them. For, in an adverse climate, many of the species make luxuriant vegetative growth for years, but do not produce any flowers, while success with others depends upon the cultural methods

employed. As a rule, the aim should be to reproduce the conditions under which a particular species grows in its native habitat. In the first place, Orchids may be divided into two important classes, namely, the *terrestrial* or ground orchids, and the *epiphytal*, which grow naturally upon the trunks of trees using them merely for support and not for nourishment. The latter they derive almost entirely from the air, and to some extent from the residue of decayed organic material which collects among their roots. Those of the temperate climate are mostly ground orchids, such as the *Cypripediums* (Lady's slipper). The tropical orchids are mostly epiphytal and have aerial roots which cling to the supports on which they rest. In other cases they have what are called "pseudo-bulbs" which are special food reservoirs to tide over adverse conditions of the weather. The epiphytal kinds may also be grown in pots. Certain fundamental requirements are common to both kinds. These are: (1) The drainage at the roots must be thorough, *i.e.*, the roots must at all times have sufficient moisture but not remain wet, (2) They should receive water plentifully during active growth, and sparingly in a dormant state, (3) The roots should not be disturbed, nor propagation by division attempted, except when the plant is starting into active growth, (4) The plants

should preferably be in partial shade, where they are protected from a direct sun but receive plenty of diffuse light.

In order that the drainage at the roots may be thorough, the pots in which orchids are grown are filled to $1\frac{1}{2}$ or even $2\frac{2}{3}$ of their depth with porous drainage material, such as pieces of charcoal, broken brick or sphagnum moss (Fig. 13, 'd', page 48). For the ground orchids, the following compost has been found suitable: 1 part sandy loam or red earth, 1 part peat, 1 part pieces of broken brick, 2 parts charcoal, and a light sprinkling of bone meal. The bone meal may be replaced by one or two small pieces of bone for each pot. Where peat is not available well-decayed leaf-mould may be substituted. The top must be covered with sphagnum moss in a convex shape well above the rim. When sphagnum moss cannot be had, cocoanut fibre first chopped up into small pieces, and then rubbed over a coarse sieve may be used. Comparatively small, 4—6 inches pots, are usually more suitable than larger ones. The compost as above should be renewed every year on the advent of the seasonal rains. The epiphytal orchids hardly require any soil. The thoroughness of the drainage is ensured by filling half the depth of the pot or pan with a mixture of equal parts of potsherd and large bits of

charcoal (which is not over burnt). The plants are usually placed in hanging baskets made of narrow strips of wood or in perforated pans (Fig. 5, page 34). Epiphytal orchids are also satisfactory when grown on round logs of wood (preferably with a rough bark) about 3—4 inches in diameter and 20 inches long with a nail driven in at one end and suspended by wire in the conservatory. They may also be grown on the trunks of large rough barked trees of spreading habit. When grown in pots, the compost should usually consist of 1 part potsherd, 2 parts of large bits of charcoal, and 1 part of peat or of sphagnum moss or cocoanut fibre rendered like sawdust as described above. On stumps of wood or on the trunk of a tree the plant is first laid on and then covered with this same material which is held in place with a piece of sackcloth or of wire netting spread over it and a couple of nails driven in at the ends. The material is kept constantly wet for the first few weeks by syringing it several times a day. The aerial roots that adhere to the sides of the pots or baskets should not be disturbed. For re-potting, it is enough to remove the old material and replace it with fresh compost about once a year. For those species which bear flowers in long pendulous scapes, hanging baskets of wood (Fig. 5, page 34) form the best receptacles.

The selection of orchids suitable for a given locality depends upon the climatic conditions, as determined in particular by the amount of rainfall. In Madras and its neighbourhood, where the climate is hot and moist and the rainfall meagre, several of the *Cypripediums* and all the species of *Spathoglottis* and *Phaius* among the ground orchids, and *Aerides*, *Vandas*, and *Dendrobiums* among the epiphytes are generally successful. On the west coast and other places on the plains with an annual rainfall exceeding 70 inches, these same species can be cultivated far more successfully and a few more, such as *Phalaenopsis*, *Peristeria*, *Calanthe*, etc., may be grown. At medium elevations of 3,000 feet and upwards, both the groups mentioned above will thrive with little care, and some of the most showy species, such as *Laelias* and *Cattleyas* which belong to the cooler regions of S. America and which are among the most gorgeous in this class of plants can also be cultivated successfully. At the hill stations under glass almost all the species that are popular in the western conservatories can be raised.

The following species are worth a place in a collection in S. India, their success on the whole increasing with the elevation and rainfall. At an elevation of about 2,000 feet, and with a rainfall of about 75 inches, nearly all those mentioned below must flower well.

Terrestrial.

Acanthophippium bicolor. From Ceylon. Flowers yellow tipped with purplish-red.

Calanthe. Indigenous to Burma. *C. vestita* bears showy spikes of white flowers with rose-coloured centre. *C. vestita nevalis* is similar to the last but the centre of the flowers is yellow. Both well suited to the rockery.

Coelogyne asperata. From Borneo. Has long pseudo bulbs. Flowers, strongly-scented, creamy white with brown streaks. Long drooping racemes. *C. Dayana* has smaller leaves but a taller habit, and lemon-yellow flowers.

Cypripedium: Lady's Slipper; Venus' Slipper. Contains many beautiful species which flower freely in the cold season in the plains. *C. concolor*, native of Burma, has pretty variegated leaves and bears large primrose coloured flowers. *C. insigne*, *C. venustum*, *C. niveum*, *C. barbatum* are other important species.

Eulophia macrostachya. From Ceylon. Flowers—purplish-green with the lip yellow.

Lycaste skinneri. From Guatemala. Flowers—white and crimson.

Peristeria elata. From Panama. Popularly known as the Holy Ghost Orchid. Flowers globose, dull white, the centre like a dove, scented.

Phaius Bensoniæ From Moulmein. Large amethyst-purple flowers. *P. Blumei*. From Java. Flowers light yellow with splashes of red.

Spathoglottis. Several species from Borneo and elsewhere, white. Very satisfactory on the hot coastal plains with a meagre rainfall. May be treated like other pot plants. *S. plicata* bears erect spikes of fairly large white, pink or magenta coloured flowers, 2 feet. *S. aurea* from Malaya bears bright yellow flowers.

Epiphytic.

Aerides odoratum. Indigenous to Assam. Flowers white, with spots of magenta, scented. Generally successful everywhere. *A. affine* bears long spikes of rose-coloured flowers. Also several other species.

Angræcum sesquipedale. From Madagascar. Large white flowers. *A. Sanderianum*, flowers pure white, in long sprays.

Cattleya. Many species of unrivalled merit from Central and South America. Succeed well under sub-tropical conditions.

C. Bowringiana, flowers purple and magenta; *C. citrina*, lemon yellow;

C. Eldorado, orange and purple, *C. gigas*, purple and crimson, very large;

C. Skirnerii, rose purple.

Chysis: From Borneo. Culture as for *Vanda*. *C. bractescens*, large white flowers.

Cymbidiums. From Burma and Ceylon. *C. bicolor*, flowers yellowish with splashes of purple; *C. Lowianum*, yellowish green, blotched crimson.

Dendrobium: A very large genus. *D. Dalhousianum*, from Burma; 4—5 feet, flowers large yellow and rose. *D. densiflorum*, indigenous to Sikkim; flowers yellowish orange. *D. fimbriatum*, orange yellow. *D. Macarthiae*, from Ceylon; rose pink. *D. nobile*, indigenous. Flowers, large white, tipped with rose-purple, showy. *D. regium*, large purplish blue. *D. superbum*, from the Philippines; pink tinged with rose. Also numerous other species the majority of which are very showy.

Epidendrum. From Mexico. *E. radicans*, bright, terminal, orange-scarlet flowers.

Grammatophyllum speciosum. From Malaya. The "Giant Orchid" stems 6—8 feet. Flowers in stout, erect racemes, 4—6 feet, brownish yellow.

Laelia. This group, from Brazil, together with its *Cattleya* hybrids contains some of the showiest and costliest plants ever known. *L. purpurata*, *L. superbiens*, *L. grandis* have large and showy flowers with a preponderance of rose-white and crimson purple colours. The *Laelia-cattleya* are even more important; some of them are also sweet-scented. Those known as *Andreana*, *elegans*, *radiata*, etc., are unsurpassed for their great size (each flower 6—7 inches across) and dazzling beauty.

Oncidium luridum. From West Indies, 1—2 feet. Flowers brownish yellow. *O. Papilio-majus*, large, butterfly shaped flowers.

Phalaenopsis. One of the most desirable and free flowering at medium elevations. *P. amabilis*, from Malaya. Flowers large, white, splashed with red. *P. Schilleriana*, from the Philippines; leaves variegated, flowers large, rose-purple.

Pholidota imbricata. From Ceylon. Produces long drooping racemes of white flowers with a reddish brown tinge.

Renanthera. Mostly from Burma. Stems long, creeping. Flowers in long, loose racemes. *R. coccinea*, flowers pink, blotched crimson; *R. Imshootiana*, rose crimson.

Rhynchostylis retusa. The Fox-tail Orchid, Eastern tropics. Flowers white with purplish spots, showy.

Saccolabium Wightianum. From Ceylon. Flowers light yellow, tinged with red.

Sophronitis Grandiflora. A bright showy little orchid. Belongs to the higher elevations. Flowers—orange red.

Stanhopea. From Mexico and Ecuador. Flowers in pendulous spikes through the bottom of the basket. Flowers showy and scented but short lived. *S. grandiflora*, yellow, orange and crimson. *S. tigrina*, red, blotched yellow.

Vanda. A large genus containing several species particularly well suited to low elevations, hot and moist, like Madras. *V. Roxburghii*, Bengal, very free flowering, late in the hot summer months when other flowers are scarce. Flowers, pale buff with dark-brown spots and blue or pink lip, scented. *V. teres*, indigenous to Assam, stems and leaves cylindrical, 5 feet or more high, flowers, crimson, rose, and orange yellow, *V. coerulea*, Assam, light blue flowers, showy, *V. Hookeriana*, stems and leaves cylindrical, flowers, crimson-purple, and orange, *V. tricolor*, from Java; flowers, scented, yellow with brown spots.

Oxalis.*Oxalidaceae.*

Dwarf pot plants, bulbous or tuberous, usually trifoliate, suitable also for rockeries. *O. rosea* and *O. variabilis* with its varieties *alba* and *rubra* are very pretty and free flowering through the spring and summer. The plants die down late in the summer, the bulbs should then be rested and stored in the same way as *Achimenes*.

Oxyanthus.*Rubiaceae.*

O. tubiflorus is a shrub, 4—5 feet, with flowers white, sweet-scented, somewhat like the *Gardenia*, but slender with long tubes, and borne in loose racemes. Propagated by cuttings.

Palms.

An extensive group of foliage plants aptly described by Linnaeus as the "Princes of the vegetable kingdom." Palms grow most luxuriantly and with little care almost everywhere in S. India. At elevations above 3,000 feet, they do not grow so rapidly as on the plains, and at the hill stations they need protection under glass in the winter. Although they are not very particular as to soil, they prefer a light porous soil, rich in humus, plenty of water at the roots and a warm and humid atmosphere characteristic of the coastal plains of the tropics. They are mostly propagated by

night or replaced by others at least once a week, but preferably at shorter intervals. They should also be syringed thoroughly every week. Of the numerous species (nearly 1,200) about 25 or 30 are universally popular as ornamentals and divided into two main groups: Feather-leaved and Fan-leaved. The following are among the most highly prized:

Feather-Leaved.

Archontophoenix Alexandræ. Very handsome; Feather-leaved. *A. Cunninghamii* (syn. *Seaforthia elegans*). Somewhat more robust than the preceding. Both from Queensland. Fairly rapid growers.

Areca. A. Catechu, Areca-nut. The Betel palm. Grown extensively for its commercial crop. Tall and stately. Flowers sweet-scented. *A. concinna* is a small, slender and exceedingly elegant palm. *A. triandra* is another very ornamental species.

Arenga saccharifera. A tall palm with large leaves. Handsome.

Bactris major. The Peach nut Palm, Spiny. Slender, numerous stems, somewhat rare. Fruit considered edible.

Calamus Rotang are the Rattan palms. Suitable in gardens only as pot plants in their young state. *C.*

ciliaris of dwarf habit, is the species best suited for pot culture.

Caryota. Handsome and popular. *C. urens* (Toddy palm) is the species extensively cultivated. Very striking when in bloom.

Chamaedorea. Very elegant and dwarf. *C. elegans*, on the plains requires a shaded situation; well suited to sub-tropical conditions.

Chrysalidocarpus lutescens (also called *Areca lutescens*) is one of the most beautiful and satisfactory palms on the plains and equally well suited for pot culture. Fine feathery leaves and bushy growth, as it grows in clumps.

Cocos. A group of very elegant palms including the *Cocos nucifera* (the cocoanut palm) so extensively cultivated in the coastal districts of S. India as a plantation crop. *C. Weddelliana* is doubtless the most ornamental in this group, but rather delicate and rare. It thrives under conservatory conditions at medium elevations. *C. flexuosa* and *C. plumosa* are other desirable species.

Cyrtostachys Lakka (syn. *C. Renda*). The sealing wax palm of Sumatra. A handsome palm.

Dictyosperma alba. A fine species and a strong grower. Makes bold and beautiful specimens.

Dypsis madagascariensis. Bushy growth. The leaflets are whorled.

Euterpe edulis and *E. oleracea*, from tropical S. America, are of rare elegance.

Geonoma gracilis and other species also from tropical America are small elegant forms, suited to medium elevations.

Howea (syn. *Kentia*).

Hyophorbe Verschaffeltii. Very ornamental. Bottle-shaped.

Kentia. A genus of highly esteemed ornamental palms extremely well suited for pot culture. *K. Australis*, *K. Belmoreana*, *K. Forsteriana* and *K. Sanderriana* are all universally popular. The last mentioned has two varieties, both equally desirable.

Martinezia caryotacfolia and *M. Lindeniana* of S. America, are both of uncommon excellence; leaves and stem, spiny.

Nipa fruticans. A palm that thrives in waterlogged or marshy places.

Oreodoxa regia. Royal palm; Bottle palm. Tall and stately. Ideally suited for garden avenues. *O. oleracea*. Cabbage palm is also strikingly handsome.

Phoenix. Palms of the date family of which *P. Roebelinii* is perhaps the most handsome of its class. *P. rupicola*, *P. canariensis*, etc., are also important.

Pinanga Kuhlii and *P. spectabilis* are dwarf species of bushy habit.

Ptychosperma Macarthurii is one of the choicest of pot palms. Tufted and bushy. Easily succeeds on the plains.

Rhopaloblaste hexandra. Extremely handsome in its young state.

Fan-Leaved.

The following are important: *Corypha umbraculifera*, the Talipot palm; *Hyphaene thebaica*, Drum palm, branching; *Latania rubra* (*Commersonii*), *L. Loddigesii* and *L. Verschaffeltii*; *Licuala elegans*, *L. gracilis* and *L. grandis* (syn. *Pritchardia grandis*) one of the most magnificent, with leaves almost circular, pleated and fan-like); *Livistona australis*, *L. chinensis* and *L. rotundifolia* (very popular); *Sabal Blackburmanum*, etc., *Stenersonia grandifolia* quite as magnificent as is suggested by the name. (It has spiny leaves of a reddish tint); *Thrinax* (a fine genus) including *T. argentea* and *T. elegans* (one of the very best for pot culture), and *Verschaffeltia splendida*.

Panax.*Araliaceae.*

A group of extremely useful and elegant foliage plants of medium height. *P. fruticosum* has handsome feathery leaves. *P. crispum*, *P. elegans*, *P. multifidum* and *P. Victoriae* are other handsome species. The name is sometimes used synonymously with *Aralias* and the cultural requirements are the same in both cases. Propagated by cuttings in sand.

Pancratium.*Amaryllidaceae.*

Attractive bulbous plants requiring the same treatment as *Amaryllis*. *P. gloriosa* and *P. scyianicum* are two of the showy species suitable for the lower elevations and bear pure white flowers. Propagated by off-sets; occasionally by seed.

Pandanus. *Screw pine.**Pandanaceae.*

Foliage plants. In pots they are very elegant as house plants. Also planted along the margin of ponds where they thrive splendidly and grow into dense bushes about 20 feet high. Treated in the same way as *Dracaenas*. *P. Veitchii*, *P. utilis*, *P. odoratissimus*, *P. candelabrum*, *P. spiralis* and *P. variegatus* are among the important species for decorative purposes. Propagated by suckers in sand in the rains preferably with bottom heat.

Pansy: (*Viola tricolor*).

Violaceae.

Heart's-ease. Universal favourites which are perennials but best treated as annuals raised from seed. In the cold season pansies are successfully cultivated even on the plains at sea level, but at low elevations, they are apt to be shy bloomers. Numerous varieties, all extremely showy, have been produced in recent years by breeding. The predominant colours are blue, purple, yellow and violet. Pansies love a rich soil, and moderate watering. The shifting into larger pots (from 3" to 8") should be gradual. Propagated by seed.

Parkia.

Leguminosae.

P. Roxburghii is a magnificent shade tree, exceedingly ornamental with its fine feathery leaves, and quick growing. Thrives well on the plains near the coast. *P. biglandulosa* is another equally desirable species.

Passiflora: (*Passion flower*).

Passifloraceae.

Quick growing climbers of easy culture and vigorous and extensive habit, which bear showy flowers which in many species are also sweet-scented. *P. cærulea* has 3—5 lobed leaves, and flowers bluish purple, *P. laurifolia*, violet-purple; *P. quadrangularis* bears very large violet-purple flowers which if hand-pollinated

produce the fruit known as *Granadilla*. All these species thrive well on the plains. Propagated by cuttings or by layering.

Peacock Flower: *Caesalpinia*.

Pedilanthus.

Euphorbiaceae.

P. tithymaloides is a succulent shrub of medium height, the variegated variety of which is ornamental on a cactus mound. The green-leaved form is useful for sticking into the ground along rows of newly planted annuals, etc., for protection from the sun. Propagated easily by cuttings.

Pelargonium.

Geraniaceae.

Allied to Geraniums which they closely resemble. Those of the 'zonal' group, of which there are numerous varieties, are all large flowered and showy. They do not thrive on the plains near the coast. The plants make vegetative growth in the cold season but do not flower freely. They seldom survive the hot weather. Nearly mature terminal wood of the current season's growth brought from the hills at the end of the hot weather makes good cuttings which are easily rooted in sand. These should be potted up hard in small 4 to 6 inch pots and occasionally fed with liquid manure. Plants thus raised are fairly satisfactory. At medium elevations they thrive with little care. Propagated also

by seed, but named varieties must be propagated by cuttings.

Pelican Flower: *Aristolochia*.

Peltophorum.

Leguminosae.

P. ferrugineum is a splendid shade tree with fine feathery leaves and a large spreading top, looking magnificent when it is loaded through the greater part of the year with its large panicles of fragrant, bright yellow flowers. Quick growing and propagated by seed.

Pentas.

Rubiaceae.

P. carnea is a dwarf, pretty, free flowering shrub with large clusters of mauve, pink or white flowers almost throughout the year. Thrives with little care, and excellent for low hedges or edgings. The flowers are very useful for cutting. *P. lanceolata* (*Ophiorrhiza lanceolata*) has larger leaves, flowers pale purple; var. *kermesina*, carmine-rose, tinted violet in throat. Easily propagated by cuttings.

Pentstemon.

Scrophulariaceae.

Bright tubular-flowered bedding or border plants, about 2 feet high, somewhat resembling snapdragons; suitable for the medium elevations. Propagated by division or seed.

Peperomia.*Piperaceae.*

A dwarf foliage plant suitable for shaded conservatories, on rockeries, or as pot plants. Of easy culture. *P. argyrea*, is perhaps the most important species. Propagated by cuttings.

Pereskia.*Cactaceae.*

P. Bleo is a large spiny climber of the cactus family, very ornamental when in bloom. Bears clusters of large purplish pink flowers in great profusion. Requires a light, well-drained soil and a sunny aspect. Propagated by cuttings.

Pergularia.*Asclepiadaceae.*

P. odoratissima, commonly known as the Indian Cowslip Creeper, is an extensive climber which bears in great profusion greenish yellow flowers of a most delightful fragrance. Of easy culture. Propagated by layers.

Periwinkle: *Vinca.**Asclepiadaceae.***Persian Lilac:** *Melia Azadirach.***Petrea.***Verbenaceae.*

P. volubilis, better known as the Purple Wreath, is one of the most charming among the large woody twiners; native of S. America. When in bloom it is a mass of violet-like flowers with lilac-coloured bracts in

long racemes each 7—8 inches long. The flower wreaths are borne terminally on the young growth. Pruning should therefore be done *moderately*, just before the plant starts into new growth, to secure as many short spurs of young wood as possible. Propagated by layers which take a long time (2 or 3 months) to root.

Petunia.

Solanaceac.

One of the most easily cultivated and free flowering annuals that succeeds everywhere in India and remains in bloom through the greater part of the year. The seed is very small, like tobacco seed, but germinates very freely. The young seedlings should be pricked out into pans and cut back when about 6 inches high to induce bushy growth. When planted out in beds, the leading shoots should be pegged down into the soil with little forks made of twigs, to ensure a vigorous and even spread. The flowers are large, showy and of numerous shades of white, pink, red and purple. The double or the fringed varieties and other rare forms are best preserved from year to year by means of cuttings or layering.

Phalaris.

Gramineac.

P. arundinacea is a very pretty variegated grass of dwarf habit suitable for edgings, etc. It is also called Ribbon Grass or Gardener's Garter. On the plains

it should remain in partial shade in the summer and watered sparingly. Propagated freely by division in the rainy and cold seasons.

Philodendron.

Araccae.

Ornamental foliage plants with bright satiny leaves resembling Anthuriums in habit and cultural requirements. *P. andreaeanum* is a climber. *P. gloriosum*, *P. erubescens*, *P. squamiferum* are other showy species suitable for conservatories as pot plants. Propagated by cuttings.

Phlogacanthus.

Acanthaceae.

Flowering plants of medium habit, like Justicias, suitable for the shrubbery. *P. thyrsiflorus* bears terminal spikes of orange-coloured flowers. Propagated by cuttings.

Phlox.

Polemoniaceae.

P. Drummondii with its numerous varieties is a very popular, showy and easily cultivated annual 6—18 inches tall. The flowers are borne in great abundance, in flat-topped cymes, presenting a wide range of colour in shades and markings of white, cream, pink, crimson, scarlet, blue and purple. Raised from seed. The seedlings should be stopped frequently to make a bushy growth before they begin to flower. *P. paniculata*, *P.*

maculata and several other species known as the perennial phloxes do not thrive on the plains. They grow well at medium elevations and are very desirable and showy. Propagated by division.

Phormium.

Liliaceae.

P. tenax variegatum; New Zealand Flax. An excellent foliage plant with long, rigid, sword-shaped leaves, somewhat like an agave, suited to medium elevations, in moist and shaded places. Very distinctive. Propagated by division or by seed.

Phyllanthus.

Euphorbiaceae.

A group of shrubs and medium sized trees with ornamental foliage. *P. distichus* is a dwarf tree which produces what is called the Star Gooseberry. *P. emblica*, is a moderate sized tree with feathery foliage, producing the Indian Gooseberry. Propagated by seed. *P. nivosus* var. *roseo-pictus* and var. *atro-purpureus*, 2—4 feet (very ornamental), *P. myrtifolius*, 4—5 feet, *P. pulcher*, etc., are slow-growing shrubs suitable for hedges. Propagated by cuttings, or by seed.

Phyllocactus.

Cactaceae.

Thornless shrubs of the Cactus family with flattened leaf-like branches, suitable for the open rockery; flowers, large and showy, of pink and other shades. *P.*

amabilis, *P. crenatus*, *P. grandis* are some of the important species. Propagated by cuttings.

Pilea: *Artillery Plant.* *Urticaceae.*

P. muscosa (syn. *P. microphylla*) is a dwarf moss-like weedy plant with very small leaves and inconspicuous flowers but very effective in pans or hanging baskets and also for edgings. The name artillery plant is derived from the fact that the flowers shed their pollen visibly and forcibly. If the plant is placed in the sun after watering the foliage, a regular bombardment may be witnessed. Easily propagated by cuttings.

Pineapple variegated: *Ananas.*

Pinks: *Dianthus.*

Pisonia. *Nyctaginaceae.*

P. alba, Tree Lettuce, is a very ornamental foliage tree of medium height and bright pale green foliage. Well suited to sandy soils near the sea coast. The leaves can be used as an excellent food for cattle. Propagated easily by cuttings.

Pitcairnia. *Bromeliaceae.*

Billbergia-like plants, allied to the pineapple. The leaves are in rosettes and the flowers in a central spike or raceme, long-tubular bright red, yellow or nearly

white *P. alta*, flowers red. *P. caerulea*, blue. Also several other species. Propagated by division or suckers.

Pitcher-plant: *Nepenthes*.

Pithecolobium: (*Inga*). *Leguminosae*.

P. Saman is the well-known Rain Tree. Large, spreading, and rapid growing. Very suitable as a shade tree in a distant corner of the garden, as it grows to an enormous size and the branches are easily broken by the strong monsoon winds. Thrives in sandy soil. Propagated by seed or cuttings. *P. dulce*, the *Madras Thorn*, is a shrub-like tree of moderate height, very popular as a hedge, as it can be clipped to any desired height and makes a dense barrier. Propagated by seed.

Pleroma: *Tibouchina*.

Plumbago: *Leadwort*. *Plumbaginaceae*.

Beautiful perennial shrubs of easy culture. *P. capensis*, 3—5 feet, bears in great profusion umbel-like clusters of delicate azure blue flowers. There is a variety with pure snow-white flowers equally charming. They are useful for borders or edgings and may also be massed in permanent beds. They are in bloom almost throughout the year, provided each time after

flowering is over, the bushes are cut back and manured to produce fresh growth. This process also makes the plants look neater. *P. capensis* can also be trained as a climber to a considerable height. *P. rosea* has much larger leaves and bears bright red flowers in long racemes, in the spring and early part of the summer. Propagated by division, or by cuttings of small spurs taken with a heel, with bottom heat, in the rains.

Plumeria: *Pagoda Tree.* *Apocynaceae.*

(Also spelled *Plumieria*). Handsome flowering trees of moderate size, with large leaves and terminal cymes of large, waxy, fragrant, funnel-shaped flowers in great abundance. *P. acutifolia* has leaves 1 foot or more long, 3 inches wide, and flowers white with centre flushed yellow; also known as Temple Tree, *Frangipani*. Thrives with little care. Well suited to sandy soils close to the sea. *P. rubra* is a similar tree with flowers golden yellow at the centre and bright rose at the tips. *P. alba*, bears white flowers. All easily propagated by cuttings.

Pogostemon. *Labiatae.*

P. Heynayanus is the Patchouli Plant. 2—3 feet high. Flowers inconspicuous but have the characteristic fragrance of the Patchouli oil. Propagated by cuttings.

Poinciana.*Leguminosae.*

P. regia, or the Royal Poinciana, is the well-known Gold Mohur, also called Flamboyant, Flame of the Forest, Peacock Flower. Native of Madagascar. A magnificent tree of enormous spread, with beautiful feathery foliage, and gorgeous in bloom. Rapid growing. Flowers large, bright scarlet with one petal striped yellow. One of the most desirable among ornamental shade trees. *P. Gilliesii* (*Bird of Paradise Flower*) is a shrub of medium height with very fine feathery foliage and large showy flowers of buff and crimson in terminal racemes. Propagated by seed. *Poinciana* is often used as a synonym for *Casalpinia*.

Poinsettia.*Euphorbiaceae.*

P. pulcherrima is one of the most universally popular plants for the Christmas season. A shrub with inconspicuous flowers but with a whorl-like cluster of flaming red leaves or bracts near the top, which are the ornamental feature of the plant. Poinsettias can be planted in the border where they grow with little care and make large bushes which produce a blaze of red in the cold season. They are commonly grown in large pots in bush form. But their true decorative value is seen when several small plants hardly 10 inches high are brought into bloom in a 6-inch pot. Terminal cuttings of young wood (but not too tender),

4—6 inches long, put down in pans of sand in a shaded place in September (or earlier where the rains begin in June or July) produce roots in 3—4 weeks. These cuttings should be carefully potted up in a rich porous compost in 4-inch pots without disturbing the roots, as they otherwise receive a serious check and all the leaves (except the top bud) are shed. About four of these rooted cuttings shifted into a 6-inch pot about 5—6 weeks later in a richer compost, and placed in the full sun, so as to hasten growth make fine specimens for Christmas. There are also pink or flesh coloured and white varieties.

Polianthes: *Tuberosa*.

Amaryllidaceae.

P. tuberosa is a very satisfactory and free-flowering bulbous plant producing long spikes of white blossoms which are very fragrant. There are single and double flowered varieties. The name "tuberosa" is derived from *tuberosa* (tuberous hyacinth). The name therefore is not *tube-rose* but *tuber-ose*. Tuberoses are best planted in the ground or bed in a sunny situation, in a compost rich in horse-manure. Occasional application of liquid-manure is also necessary. The bulbs should be lifted every two years at least and planted in fresh soil. The offsets may be removed from time to time and planted separately. The single varieties

are more satisfactory than the double ones on the plains. Propagated by offsets.

Polyalthia.

Anonaceae.

P. longifolia is an ornamental shade tree of straight habit and graceful glossy green foliage with wavy margins. Very useful where long vistas are desired. Propagated by seed.

Polygonum.

Polygonaceae.

P. punctatum is a weedy plant (4—5 feet), but very useful for covering low, swampy ground or shallow ponds where water collects in the rainy season. The pink spikes are useful as cut flowers for vases. *P. chinense* is a white flowered species 5—7 feet that thrives at medium elevations. Propagated by seed or division.

Pomegranate (Flowering): *Punica.*

Pongamia.

Leguminosae.

P. glabra, Indian Beech. A shade tree with bright glossy green foliage and bearing racemes of creamy white fragrant flowers. Propagated by seed.

Pontederia.

Pontederiaceae.

P. cordata is an aquatic plant, allied to the water Hyacinth, suitable for a shallow pond, water gardens

or fountain basin. Flowers blue. Propagated by division.

Poppy: *Papaver*.

Papaveraceae.

Annual of great beauty and popularity; but in S. India it seldom thrives on the plains. Under subtropical conditions it thrives with little care. There are many species and florists' varieties representing numerous shades of red, violet, yellow and white, and single and double forms. *P. Rhæas* is the Shirley Poppy. *P. somniferum* is the *Opium Poppy*. *P. Orientale* is the *Oriental Poppy*, a perennial, but for garden purposes an annual. Flowers which resemble poppies in shape are also popularly called poppies. Thus *Eschscholtzia* is called the Californian Poppy, and *Limnocharis* an aquatic plant, Water Poppy.

Porana.

Convolvulaceae.

P. racemosa, aptly termed The Bridal Creeper, is a strong shrubby climber, sometimes 30 feet high, bearing in great masses its large panicles of small white flowers. *P. volubilis* is also a large climber similar to the last, except that it has somewhat coarser leaves, but is equally showy in bloom and is called the Horse-tail Creeper because of its long spray of creamy white flowers. *P. paniculata* is also a desirable species, similar to the preceding, with smaller leaves which are also very smooth. Propagated by cuttings or by layering.

Portulaca.*Portulacaceae.*

P. grandiflora, Rose Moss, is a popular and showy annual of trailing habit, which succeeds very well on the plains. The seed is very minute but germinates freely; watering the tiny seedlings should be done by lowering the seed pan to the rim in a basin of water. Requires a sunny situation. The leaves are fleshy and narrow. Flowers, large (1 inch or more across), terminal, single or double, in many bright colours, like little roses, but soon withering.

Pothos.*Araceae.*

Vigorous epiphytal climbers with large showy leaves blotched or variegated. Suitable for covering the trunk of large trees. *P. aureus* and *P. argenteus* are two important species. They thrive in moist, and shaded situations. Propagated by cuttings.

Primrose (Evening): *Oenothera.***Primula:** *Primrose.**Primulaceae.*

P. obconica is a dwarf, extremely elegant, and much prized flowering plant, best treated as an annual. Suited only to hill stations. *P. sinensis* is an equally showy species; also numerous other species and hybrids. Primulas require a rich loamy soil and are best treated as annuals, raised from seed.

Privet: *Ligustrum ovalifolium*. *Oleaceae*.

A very popular hedge plant of the temperate regions which can be clipped close to any height and shape; ornamental with its small oval leaves. Suited to medium elevations. Propagated by cuttings.

Pterocarpus. *Leguminosae*.

P. indicus is a large shade tree of Burma of a spreading round head and long drooping branches. Flowers yellowish, sweet-scented. *P. cchinatus* is a smaller tree, very ornamental when loaded with its large clusters of light orange yellow flowers. Propagated by seed.

Pterospermum. *Sterculiaceae*.

P. acerifolium is a magnificent foliage tree with its very large leathery leaves greyish underneath. Propagated by seed.

Punica. *Punicaceae*.

P. granatum is the pomegranate of which there is an ornamental flowering species with bright red, full double flowers. It is also very serviceable as a hedge plant. Propagated by cuttings in the rains.

Quamoclit. *Convolvulaceae*.

Q. pinnata, syn. *Ipomœa Quamoclit*, Cypress Vine, is a slender climber with bright red flowers, easily cul-

tivated. There is also a white flowered variety. Propagated by seed which is often self-sown.

Queen of the Night: *Cestrum*.

Quisqualis.

Combretaceae.

Q. indica Rangoon Creeper, is an extensive climber of extremely vigorous habit, enveloping the tops of even very large trees. Useful for screens or trellises or covering unsightly corners. Bears in great profusion large drooping clusters of pale-pink flowers changing to deep red. Propagated by cuttings, division or layering. Thrives in almost any soil. The flowers last well when cut.

Rain tree: *Pithecolobium*.

Rangoon Creeper: *Quisqualis*.

Ravenala: *Travellers' Tree*.

Musaceae.

R. madagascariensis is an ornamental foliage tree closely resembling the Banana tree, but even more distinctive with its very large leaves crowded in 2 ranks, forming a fan-shaped head of foliage. Propagated by suckers or seed sown in sand.

Reinwardtia: syn. *Linum*.

Linaceae.

R. trigyna (*Linum trigynum*) is a very showy flowering shrub of easy culture, 1—2 feet. Bears in

great profusion in the cold season and spring bright yellow flowers, mildly scented, each $3\frac{1}{4}$ inch across. Very pretty in bloom and useful for edgings or in a mixed border. Propagated easily by cuttings.

Reseda odorata: *Mignonette*.

Rhododendron.

Ericaceae.

Well-known flowering shrubs of unrivalled beauty belonging to the temperate regions of which only *R. arborcum*, a species indigenous to Ceylon and growing to the size of a small tree, 20 feet high, succeeds well at the hill stations, above 5,000 feet and bears large pink or red flowers. Thrives in a rich and somewhat heavy soil. Propagated by layering, occasionally by seed which is very minute and demands considerable skill in handling.

Rhynchospermum: *Trachelospermum*.

Richardia: syn. *Zantedeschia*.

Araccae.

R. africana is the Calla Lily or Arum Lily. Popular tuberous plants, much prized for their large pure white fragrant spathes. They thrive only under sub-tropical conditions and grow with little care at the hill stations. *R. Elliottiana* is the Yellow Calla which is equally bright and showy but less common. The Callas require a deep rich soil and plenty of water. Propagated by offsets.

Rivina.*Phytolaccaceae.*

R. humilis is a weedy shrub, often self-sown in Indian gardens, but when properly grown, it is very pretty with its clusters of bright red berries. Propagated by seed or cuttings.

Rondeletia.*Rubiaceae.*

R. odorata is a beautiful Mexican flowering shrub of exceedingly slow growth and hardwood, in bloom almost throughout the year. Bears large clusters of bright red and yellow flowers. There are other species equally attractive, with pink and yellow, or pink and white flowers but are less common. Propagated by layering or by cuttings in the rains with bottom heat.

Rosa: (*Rose*).*Rosaceae.***Rose.**

The Queen of Flowers. Roses in S. India can be cultivated with a full measure of success only at medium and high elevations. They are divided into several groups and varieties and the catalogues of nurserymen usually indicate the class or group to which each variety belongs. On the plains only a very few varieties grow and blossom freely. As a rule, those of the following groups, namely the "*Teas*", "*Hybrid Teas*", "*Noisettes*" and "*Bourbon*" are suited to the lower elevations.

The "*Hybrid Perpetuals*" are seldom satisfactory at elevations below 3,000 feet from sea level. Roses do not object so much to high summer temperatures, provided the heat is not coupled with excessive humidity. Consequently they grow better at places in the interior (where the summer temperatures are even higher than on the coast) as the nights are cooler and the air drier. Again, the coastal areas which receive the south-west monsoon are on the whole better suited to the cultivation of roses than those which get the north-east monsoon. At the lower elevations, budded and standard roses are on the whole less thrifty than plants on their own roots.

Roses are best grown by themselves in beds permanently set apart for the purpose and they are not very appropriate in mixed planting. One or two species, however, such as *Rosa rugosa*, *R. multiflora* and *R. setigera*, are well-suited for border planting for landscape effect at the hill stations.

Propagation of roses.

The rose is seldom propagated by seeds in this climate. *Cuttings* are fairly successful at the lower elevations and root very freely at medium and high elevations and also in the wet season in places where the south-west monsoon brings plenty of rain.

As a rule, small cuttings, 3 to 4 inches long, with 2 to 3 eyes each, taken from the current season's growth which is about to start again into side growth are the most satisfactory. They may be put down about 1 inch apart in shallow pans with plenty of potsherd for drainage at the bottom and sand and leaf-mould mixed in the proportion of 2; 1 for the top soil. The cuttings should be placed in the soil to about two-thirds of their length and the soil firmly pressed around each. They root more rapidly in the rains than at other times of the year. After they are well-rooted at the end of 5—6 weeks, they should be potted up hard in 4-inch pots with a light compost.

Budding is the most satisfactory method of propagation for medium and high elevations. The stock is propagated by means of cuttings taken from the most vigorous wild or semi-wild species or the one which is best able to withstand adverse climatic or soil conditions, such as the *Briar*, *Multiflora* or *Edward* and planted in rows in a bed of rich soil. When the rooted cutting makes new growth only one leading branch is retained and the other side shoots are rubbed off. When the leading branch has matured its first stage of growth and is just beginning to form fresh lateral shoots, the budding is done by means of an inverted T (*vide* page 76) about 6 inches from the bottom of

the shoot to be budded on. For standards, the stock should be grown on for another season, so that the stock may be thick enough (about 1¼ to 1½ inch in diameter) for inserting the bud at a height of about 18 inches from the base.

Grafting of roses although extensively resorted to in the west, is seldom practised in this country, as it is usually necessary only where propagation on a large scale is desired.

Inarching (page 79) gives the same results and is much easier.

Roses which are in the habit of sending up suckers from the roots may be rapidly multiplied by *division*. (page 73).

Layering (page 69), although it is a somewhat cumbersome method and leads to waste of wood, is by far the most *practical* method of propagating roses at the lower elevations. The wood employed for this purpose is usually the growth of the previous season.
Soils for roses.

Roses can be planted in almost any soil, such as clay, sand or gravel, provided that each pit is furnished with the proper compost. The most important consideration is that the drainage should be thorough, for, wet feet are more harmful to roses than anything

else. When there is danger of water-logging, they should be planted in raised beds. Where excessive moisture is likely to be present in the soil for a short time in the rainy season the following precautions are useful: The holes should be dug to a depth of 3 feet, and the bottom to a depth of 1 foot should be filled with broken stone, bricks, gravel or cinders, and covered with a thin layer of clay. The compost should vary according to the varieties selected for planting. As a rule, those of the Hybrid Perpetuals group require a somewhat heavy soil and the Tea roses and others derived from this group require a light compost. In preparing beds which may be of any desired shape, it is convenient to have them 4 feet wide in which the plants are placed in double rows, trianglewise, thus

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2½ feet apart, and 1 foot from the edge, so that the flowers can be gathered from either side without stepping on the beds.

In making rose beds on a lawn, the sod should first be removed and laid on one side. The top layer of soil to the depth of 1 foot should be placed on another side of the pit, and the soil to the depth of another 1 foot should be discarded. The bottom soil should then be loosened to the depth of a pick-head and mixed liberally with well-decomposed horse-manure. The top soil should likewise be enriched with manure,

and the pit filled to about an inch *above* the ground level, so that when the new soil settles down, its level may be about one inch *below* the level of the sod. If the beds are made higher than the ground level, there is danger of the top roots suffering in the hot weather. In the case of budded roses, (except when standards are planted), the point where the bud is inserted should be placed about 2 inches below the surface of the soil, to prevent suckers from the *stock*. Should the suckers be allowed to grow, the bud is certain to die out.

Pruning. In pruning rose plants, two main objects should always be kept in mind, namely, that the plant should spread out into shapely growth, well balanced, and admit plenty of light and air among the branches; and secondly, the new growth should consist of strong healthy flowering wood. To ensure the first, the branches that have finished flowering must be cut back to an *outer* bud so that the new growth may be in a direction *away* from the centre. To secure strong flowering wood, each main limb that has flowered should be cut back to *one* or *two* buds. In the case of climbing roses, the pruning should be less rigorous. The strong suckers from the bottom should be shortened to check excessive vegetative growth and the lateral shoots cut back to two eyes each, and the main limbs should be evenly spaced out on a trellis.

At low elevations, pruning in mid-summer should be confined to the prompt removal of snags. The beds should receive a mulching with leaf-mould or small pieces of brick in the hot months to prevent excessive evaporation of moisture from the soil. The top soil should be renewed with fresh compost each time the plants are making new growth, and weak liquid manure, about 2 pints for each plant, should be applied once a week, when the plants are about to come into bloom.

Rest period. One of the main secrets of success with roses is that after each crop of flowers the plants should be rested. This is best done by watering very sparingly. When the plant is being started afresh, it should be pruned, top-dressed and liberally watered.

Cutting the flowers. The practice of cutting flowers with long stems is commendable not merely for convenience in decorative work; it makes fresh flowering wood of a strong and healthy type. The amount of wood retained on the flowering stem should be one to two eyes according to the vigour of the variety in question.

The stage at which a flower should be cut depends on the type and quality of the flower. Very double varieties should be cut when the flower has partly expanded, while varieties producing fewer petals should be cut a little earlier, when it is still in the bud.

Insects and diseases: The tiny pinkish plant lice known as rose aphid, the green plant lice, thrips and mealy bugs are best controlled by spraying with tobacco water. If nicotine sulphate (Black leaf 40) is employed, it should be diluted by adding 2 gallons of water for every teaspoonful of the insecticide. For all caterpillars and larvæ of the rose slugs, etc., which feed on the leaves, spraying with arsenate of lead at the rate of one ounce for every 1½ gallons of water, preferably sweetened with molasses, is effective, and gets rid of the small brown beetles as well. The rose scale is a formidable enemy in this climate. This consists of very minute circular encrustations chiefly on the bark of the mature stems, which have the appearance of dandruff when scraped off, each scale being less than about 1/12 of an inch in diameter, and seldom recognised as a pest. Cleaning the stems in the summer (when the infestation is at its highest) by a brisk rubbing with a piece of sponge dipped in a solution of fish oil soap is the best means of control. Cutting off the worst infested stems is also advisable.

Attacks of mildew are of frequent occurrence at medium and high elevations, and are best controlled by dusting the foliage with finely powdered sulphur or spraying with ammoniacal copper carbonate (*vide* page 53).

Frequent syringing with soap solution (preferably of fish oil soap) is one of the best preventive measures against all pests, as it dislodges all injurious insects, removes dust, and keeps the foliage in a healthy condition.

Varieties. The varieties that flower freely in the climate of Madras are primarily the Edward Rose, Devoniensis (2 varieties), Pink Cluster, Archduke Charles, Marechal Niel, La France, Mrs. B. R. Cant, Maman Cochet, White Maman Cochet, Catherine Mermet, Paul Neyron, Betty, Souvenir de la Malmaison, Captain Christy and Etiole de Lyon. La France is justly described as the Queen of the family.

At stations away from the coast, or at coastal stations which receive the south-west monsoon, the following varieties, which are of exceptional merit, also succeed fairly well: Frau Karl Druschki, General Jacqueminot, Hugh Dickson, Kaiserine Augusta Victoria, Killarney, Mrs. A. R. Waddell, Old-Gold, White Killarney, Rayon d'Or, Crimson Rambler, Dorothy Perkins, American Pillar, Hiawatha, Souvenir de Catherine Guillot, Irish Beauty, Irish Elegance, Simplicity, Lady Hillingdon, Lamarque, Marie Van Houtte, Mrs. A. Ward, and Ophelia.

At medium and higher elevations (3,000 feet and above) almost every variety of the temperate climate responds to care in cultivation and yields excellent results. The catalogues of English nurserymen give exhaustive lists of new as well as of staple varieties, with description and coloured illustrations which are an excellent guide to the selection of varieties.

As bush roses for medium and high elevations the following may be considered the *best ten*: Lady Hillingdon, General MacArthur, Duchess of Wellington, Frau Karl Druschki, Pink Druschki, Madame Chate-nay, The Lyon, Magna Charta, Kaiserine Augusta Victoria, Ulrich Brunner.

Among the *white* roses, the following may be considered the *best ten*: The Bride, White Maman Cochet, White La France, Frau Karl Druschki, Kaiserine Augusta Victoria, White Killarney, Niphetos, Ivory, Mabel Morrison and the Queen.

The following may be regarded as the *best ten* red roses: General Jacqueminot, Hugh Dickson, General MacArthur, Lady Battersea, Magna Charta, J.B. Clark, Jonkheer, American Beauty, Agrippina, and Ulrich Brunner.

Among the *pink* roses, the *best ten* would perhaps be the following: Betty, Paul Neyron, Maman Cochet,

Clara Watson, Killarney, Madame Chatenay, Cecile Brunner, The Lyon, Belle Siebrecht, and Souvenir du President Carnot.

The following are perhaps the *best ten* among the *yellow* roses: Lady Hillingdon, Mrs. A. R. Waddell, Sunburst, Duchess of Wellington, Marie Van Houtte, Mrs. A. Ward, Soleil d'Or, Perle des Jardins, Harry Kirk and Franz Deegen.

Among the climbing roses, the following are important: The two Banksias; white and yellow, the three Cherokees, white, red and pink; Dorothy Perkins (Pink); the climbing Devoniensis (white); Crimson Rambler. (Red); Marechal Niel (yellow); William Allen Richardson (yellow).

Roupellia: Syn. *Strophanthus*. *Apocynaceae*.

R. grata (Cream fruit) is a magnificent twiner or scandent shrub with large glossy green leaves and bearing large terminal clusters of sweet-scented, waxy white flowers (purple on the outside) which are very showy. A very distinctive plant in the shrubbery. Propagated by cuttings with bottom heat in the rains or by layers at all times of the year.

Ruellia: Syn. *Stephanophysum*. *Acanthaceae*.

Dwarf perennial shrubs, mostly classed as weeds, although the flowers are very showy. *R. tuberosa* bears pretty purplish blue flowers. *R. Baikiei* is a species with crimson-red flowers. Both propagated easily by seed. *R. Makoyana* is of exceptional merit, the leaves marked on the upper surface with white along the nerves and having the under surface deep purple, and the flowers bright carmine. Requires partial shade. Propagated by cuttings.

Russelia. *Scrophulariaceae*.

R. juncea is the Coral Plant. An ornamental flowering shrub with slender pendulous branches, grass like, with bright coral red flowers. *R. floribunda* is another species also with red flowers. Propagated by cuttings.

Saintpaulia. *Gesneraceae*.

S. ionantha popularly known as the Usambara violet, also as the African violet. This conservatory pot plant is of exquisite beauty. The succulent hairy leaves, resembling those of Gloxinia, are borne close to the collar in the form of a rosette and the deep-purple flowers resembling violets in shape and size with a golden yellow eye in the centre which are displayed

well above the leaves are of a dazzling brightness. Best cultivated in small 4 inch pots or small shallow pans or baskets in a light rich soil, with a mulch of small brick pieces to prevent the fleshy leaves from coming into contact with the soil. Requires effective protection from the sun in the summer. In bloom almost throughout the year. In the summer, when the leaves are apt to damp off, water should be given very sparingly. Even if the leaves decay owing to excessive hot weather, the fleshy tuber-like stem can be saved in a pan of sand kept moderately moist and potted up in fresh soil on the approach of the cold weather. Propagated by mature leaves taken with about half an inch of the petiole and inserted in sand to the depth of half the leaf blade, or by division; also by seed which is very minute and sown in the same way as Begonia. The seedlings produce varieties with whitish or light purple flowers.

Salpiglossis.

Solanaceae.

S. sinuata, with its numerous varieties, such as *coccinea*, *azurea*, and *pumila*, is an attractive annual, native of Chile, about 18 inches, bearing large, long-stemmed, funnel-shaped flowers, ranging in colour from shades of purple, red, blue and yellow to nearly white, with beautiful markings. The flowers are useful

for cutting and last for many days. Suited to medium elevations and hill stations. Propagated by seed.

Salvia: *Sage*.

Labiatae.

One of the choicest, extensive and easily cultivated group of flowering shrubs, some of which are annuals and others perennials, but all of them, best treated as annuals in this climate. They are mostly natives of Mexico and Central America. The flowers are crimson, or sky blue, purple, pink or white. *S. splendens*, the scarlet sage, which is one of the brightest and most satisfactory annuals for the plains, remains a blaze of red from the beginning of the cold season until late in summer. Raised from seed. *S. farinacea* a native of Texas, is a blue violet and white flowered perennial species and perhaps the prettiest of the genus. Although the plants raised from seed easily survive the hot weather for several seasons in succession, fresh seedlings raised each year are more vigorous and flower more freely. Very elegant as cut flowers. The other species such as *S. patens*, *S. pratensis*, *S. leucantha*, etc., are best suited to medium elevations.

Sanchezia.

Acanthaceae.

Flowering shrubs of medium height and of easy culture. *S. longiflora*, native of S. America, 6—8 feet high, bears magenta flowers. *S. nobilis*, 4—5 feet,

which belongs to Ecuador, is cultivated for its ornamental foliage, the bright green leaves being marked with broad streaks of pale-yellow or white. Flowers yellow with red bracts. Propagated easily by cuttings.

Sansevieria.

Haemodoraceae.

Bowstring hemp. A genus of foliage plants of considerable merit and showy also in bloom. Mostly natives of Trop. Africa, some indigenous. Easily cultivated. *S. cylindrica* has leaves 3—4 feet long, cylindrical, dark green with paler bands. Flowers nearly white, tinged with pink. *S. zeylanica* has sword shaped leaves, 1—3 feet long, variegated with transverse markings of a grayish white. Flowers whitish green. *S. thyrsiflora* has a creeping stock, leaves about 18 inches long, marked with pale-green transverse bands. Flowers greenish white, fragrant. Sansevierias are well adapted for use as pot plants for decoration indoors. Propagated by division, or by leaf cuttings, about 2½ inches long, in sand.

Saraca: Syn. *Jonesia Asoka.*

Leguminosae.

Ornamental flowering trees of medium height and somewhat scandent habit in a young state. Closely allied to Brownea. *S. indica* is an indigenous tree, which bears compact roundish panicles of orange-red flowers which are fragrant and of great beauty. *S.*

declinata is a Sumatran species, somewhat similar to the preceding, but with much larger clusters of flowers. Propagated by seed or by layers. The latter should be preferred, as they come into bloom sooner, when they are only 3 to 4 feet high.

Sausage tree: *Kigelia*.

Saxifraga.

Saxifragaceae.

Rockfoil. An extensive genus of herbaceous plants, favourites of the temperate climate, suitable for rockeries. Leaves usually clustered at the base. Suitable only for the higher elevations. Propagated by division, stolons, offshoots.

Scabiosa.

Dipsacaceae.

Scabious: Showy garden flowers suited to medium and high elevations. *S. atropurpurea* is a popular annual, 2 feet, with flowers deep purple, rose or white, in long peduncled heads; easily raised from seed. There are also many perennial species, best treated as biennials, as they flower freely the second season from seed. There are also many florists' varieties.

Schinus.

Anacardiaceae.

Very ornamental trees of sub-tropical South America which, with a little care in their cultivation, thrive also on the plains. *Schinus Molle* is the Californian

pepper tree. About 20 feet. Very graceful with its fine, pinnate foliage and pendulous willow-like habit and well suited to single planting on a lawn. Bears large bunches of bright rose-coloured berries like pepper corns, whence the popular name. One of the choicest garden trees for medium elevations. *S. terebinthifolius* is a similar species, but perhaps not quite so elegant as the preceding, but better adapted to the plains. Bears bright scarlet berries. Propagated by seed.

Schismatoglottis.

Araccac.

A genus of foliage plants belonging to Borneo, New Guinea, etc., closely resembling Dieffenbachias and requiring the same treatment. There are several species of which *S. picta*, *S. neoguineensis*, *S. siamensis*, etc., are cultivated for their bright variegated foliage. Propagated by division.

Schizanthus.

Solanaccac.

Butterfly Flower. Native of Chile. One of the brightest and free flowering of the cold season annuals suited to medium and high elevations of which *S. pinnatus* is perhaps the most showy. The seed is very minute and the seedlings are somewhat difficult to transplant. Sowing is done in pots in which the plants are to remain and the seedlings are thinned out. There

are numerous florists' varieties, and the orchid-like flowers present a wide range of colour from purple and violet to lilac and rose, also white, often with a blotch of yellow spotted with a different colour. The lower lip is usually of a deeper colour than the upper. Height $1\frac{1}{2}$ —2 feet. A florists' variety named *S. hybridus* is large flowered. Not suited to the plains where the plants grow but are seldom known to flower.

Schizocentron.

Melastomaceac.

S. elegans, syn. *Heccria elegans*, also *Heterocentron elegans* is, as the name signifies, an extremely elegant plant ideally suited for carpet bedding. In its habit it is similar to *Lobelia succulenta* (Nilgiri grass) but is much more showy in bloom, bearing deep purple flowers about 1 inch across and well-displayed on the dense and bright green carpet-like foliage. This plant which is a native of Vera Cruz ought to thrive well at medium elevations here. Plants or seed can be obtained from the Peradeniya Gardens, Ceylon. Propagated by seed or cuttings. Thrives in the sun as well as in the shade.

Screw-pine: *Pandanus*.

Scutellaria.

Labiatae.

Skullcap. Dwarf flowering shrubs, bearing terminal racemes or spikes of red, violet or blue flowers in

the cold season. *S. andamanensis* and *S. indica* grow well from October to March at low elevations and are then very pretty. They nearly die down in the summer. *S. Mociniana*, native of Mexico, 1½ feet, with bright red flowers is perhaps the most showy of the several species. Suited to medium elevations. Propagated by cuttings or seed.

Sedum: *Stonecrop.*

Crassulaceae.

Succulent showy herbs useful for rockeries and border plants, also for baskets, vases and carpet bedding at medium and high elevations. *S. sexangulare* is the species best suited to the lower elevations, and bears yellow flowers. Propagated by cuttings.

Selaginella: *Club moss.*

Selaginellaceae.

Very graceful feathery, fern-like, shade loving plants and similar in habit and cultural requirements to ferns. Some are remarkable for their bluish metallic tints, of which *S. Wildenowii* is a vigorous grower, of extensive climbing habit and well-suited to being trained along the side walls or wire netting of fern houses. *S. uncinata*, the rainbow moss, *S. denticulata*, *S. martensii*, etc., make excellent carpet bedding in the conservatory. *S. Emmeliana* is very elegant in pans of 10—12 inches. Propagated easily by cuttings.

Sempervivum.*Crassulaceae.*

House leek. Succulent, stemless herbs, with leaves mostly in rosettes and thriving only at the higher elevations where they are suitable for carpet bedding, rockeries, etc., and valued for their elegant foliage. Propagated by offsets.

Sesbania: *Algati.**Leguminosae.*

Trees of medium height, rapid-growing, and very showy in respect of their foliage as well as flowers. *S. grandiflora* is one of the best species with its large rose-red or white flowers which are borne in great profusion. *S. ægyptiaca* is of dwarf habit, 6—8 feet. Easily propagated by seed.

Shasta Daisy: *Chrysanthemum leucanthemum.***Shoe Flower:** *Hibiscus.***Silk-Cotton tree:** *Eriodendron.***Silky-Oak:** *Grevillea robusta.***Sinningia:** Syn. *Gloxinia speciosa.* *Gesneraceae.*

An attractive herbaceous perennial of Brazil, 2—3 feet, with handsome foliage and showy large bell-shaped flowers of a delicately mauve shade. This plant thrives easily on the plains in the cold season and the tubers which die down in the summer are treated in

the same way as *Achimenes*. Requires protection from the midday sun and a rich soil. Propagated by tubers or cuttings.

Smilax.

Liliaceae.

Ornamental climbers much valued for their exquisitely elegant foliage used extensively for decorations with cut flowers and their habit, use and cultural requirements are the same as those of *Asparagus*. Suited only to medium and high elevations. *S. lanceolata* is the florists' smilax. Propagated by seed or by division.

Snapdragon: *Antirrhinum.*

Solandra.

Solanaceae.

Large, showy, scandent, flowering climbers of tropical America, suitable for medium elevations. A sandy loam suits them best. *S. grandiflora* may be regarded as the best of the several species. It is very beautiful when loaded with its large, fragrant, trumpet-shaped, creamy white flowers. *S. macrantha* is another desirable species with yellowish flowers. Solandras flower best on short lateral shoots from the hardened main limbs. To secure a profusion of bloom therefore new shoots of rank growth should be checked by cutting back the tips and the soil should not be very rich. Propagated by short laterals taken with a heel and

placed in a pan of sand plunged to the rim in a heap of fermenting manure.

Solanum.

Solanaceae.

A large genus of shrubs and climbers many of which are extremely ornamental in foliage as well as in flower and of easy culture. *S. macranthum* (the Potato tree) is a medium sized tree of Brazil with large leaves and showy large purplish white flowers. Propagated by seed or cuttings. *S. Rondletii* is a shrub of much dwarfer habit (5—6 feet) bearing deep purplish blue flowers. Propagated by cuttings or seed. *S. Pseudo-capsicum* is the Jerusalem Cherry, a dwarf shrub, very ornamental as a pot-plant when it is loaded with its numerous cherry-like fruits of a bright red or orange-red colour. Propagated by seed. *S. jasminoides* (Potato vine) is a very elegant climber or twining shrub of S. America, bearing pretty white flowers in racemes. A somewhat shy bloomer on the plains, but well suited to medium and high elevations. *S. Seaforthianum* is also a beautiful climber bearing light purple flowers each about 1 inch across in long drooping panicles. Propagated by cuttings. *S. Wendlandii* is a vigorous and extensive climber with large leaves slightly prickly, and bears lilac blue flowers each about 2 inches across in large cymes about 18 inches or more across and lasting in good form for several weeks in

bloom. One of the most magnificent among tropical climbers reaching 50 feet or more. Requires a full sun, and severe pruning each season after the vine has finished flowering. Propagated by cuttings or by layers.

Solidago: *Golden rod.*

Compositae.

These well-known shrubs of the temperate climate are equally at home as garden plants under tropical conditions. They flower almost as freely as in the cold countries and are very effective when massed in a bed in a sunny place. Their habit and requirements are identical with those of the perennial Asters (Michelmas Daisies). Of the numerous species only *S. nemoralis*, 18—24 inches high, with bright yellow flowers in a one-sided panicle, is met with in this part of the country. The other species such as *S. Virgaurea*, *S. canadensis* and *S. rugosa* ought to thrive equally well. Propagated easily by division.

Sophora.

Leguminosae.

Ornamental flowering shrubs of medium height suitable for the border, especially in dry stations away from the coast. *S. violaceae*, 2—3 feet, bears large racemes of showy violet coloured flowers with a dark centre. A very desirable plant for medium elevations. *S. tomentosa*, of a much larger habit, bears large erect

clusters of yellow flowers which are bright, showy laburnum like. Propagated by seed in the rains.

Spanish Bayonet: *Yucca*. *Iridaceae*.

Sparaxis.

Bulbous plants of Cape Colony very similar to *Gladiolus*, suitable for medium elevations and hill stations. *S. grandiflora* with purple and white flowers, and *S. tricolor*, orange and yellow, are two of the important species.

Spathiphyllum. *Araceae*.

Stemless foliage plants, suitable for the conservatory, deriving their name from the leaf-like spathe. They require the same treatment as *Anthuriums* and thrive best in a compost of leaf-mould, garden loam, broken brick, old mortar and sand. *S. candidum*, native of Colombia, is one of the best in this genus, 1½ feet; bears white spathes, green on the under-side. The flowers on the spadix are very fragrant but otherwise inconspicuous. Propagated by division.

Spathodea: *Fountain Tree*. *Bignoniaceae*.

S. campanulata is a very handsome tree, native of tropical Africa, of an erect and compact habit and gorgeous in bloom with its profusion of large orange crimson flowers. Suitable for a vista in large gardens.

Propagated by seed or root cuttings. The flower buds contain water which can be squirted to a considerable distance. Hence the popular name. *S. nilotica* is another equally ornamental species which comes into bearing much earlier.

Spathoglottis.

Orchidaceae.

One of the most satisfactory among terrestrial orchids suitable for culture on the plains. Requires partial shade in the summer. Height 1½ feet, resembling palms in a young state. Flowers magenta, lilac purple and white on lateral scapes, in terminal racemes. Propagated by division.

Spiraea.

Rosaceae.

Deciduous shrubs of the temperate climate, very ornamental in bloom and suitable for medium and high elevations. *S. corymbosa*, native of China, about 2—3 feet, is the only species which thrives at the lower elevations and is a pretty shrub with its numerous compact heads of pure white flowers. *S. peruviana* is another very desirable species with double flowers, white, in large clusters. Suited to high elevations. Propagated by cuttings or by division.

Sprekelia.

Amaryllidaceae.

Jacobean Lily. *S. formosissima* is a bulbous plant closely allied to Amaryllis and requiring the same treat-

ment. Suitable for medium and high elevations. Flowers large, bright crimson. There is a variety *glauca* which bears smaller flowers of a somewhat paler colour.

Stachytarpheta.

Verbenaceae.

Rather coarse looking flowering shrubs of tropical America and India, sometimes planted in the border because their verberna-like, red, rose or purple flowers on tall spikes are present almost throughout the year, and the plants can stand a great deal of drought. During the cold season they are fairly attractive. *S. mutabilis* bears crimson flowers fading to pink, $\frac{1}{2}$ inch across. *S. indica* bears deep blue flowers. Propagated by cuttings or by seed.

Stapelia.

Asclepiadaceae.

Carrion Flower. Succulent odd looking cactus-like plants some of which are remarkable also for their singular and often showy flowers. They are suitable for the open rockery or the cactus mound. Propagated by cuttings. *S. grandiflora* is one of the best species which bears a flower 5—6 inches in diameter and of a dark purple brown colour. Easily propagated by cuttings.

Stephanophysum: *Ruellia.*

Stephanotis.*Asclepiadaceae.*

S. floribunda, or the Creeping Tuberose, native of Madagascar, is one of the choicest of climbers for the plains; it bears abundant snow-white flowers with great fragrance. Does well in a somewhat sunny position and in a soil rendered lighter by the addition of broken brick and old mortar. Propagated by layers or cuttings with bottom heat in the rains.

Sterculia.*Sterculiaceae.*

A large genus of ornamental shade trees chief among which is *S. acrifolia*, the Flame Tree, native of S. Australia, with large glossy leaves and bright red flowers in large masses when the leaves are shed. Best suited to medium elevations. *S. lanceolata*, *S. colorata*, *S. alata*, etc., are other important species. Propagated by seed.

**Stigmaphyllon.***Malpighiaceae.*

S. aristatum is a handsome little climber with glossy leaves and bright yellow flowers with fringed petals. Propagated by layering.

Stipa.*Gramineae.*

S. pennata is the Feather Grass, 2—3 feet, which resembles feathers when in flower. The stems are very

useful in a dry state for bouquets and decorations indoors. Propagated by seed.

Stock.

Cruciferae.

The Ten-Week Stock, the Brompton Stock, the German Stock are all varieties of *Matthiola annua*, which are among the most popular annuals but thrive only at medium and high elevations. Transplanting of young seedlings should be avoided if possible. The *Virginian Stock* is *Malcomia maritima* which is also unsuited to the plains. At medium elevations it is useful as an edging with pretty lavender coloured flowers.

Strelitzia.

Musaceae.

S. Regina, the Bird of Paradise Flower, about 3 feet, resembling a dwarf banana plant, has very attractive foliage and bears on a scape well above the leaves, bright orange and blue-purple flowers closely resembling a bird. A very showy plant in bloom. On the plains it succeeds with difficulty and requires protection from the strong sun in the summer. *S. augusta*, of much larger habit than the preceding, is also a noble looking plant suitable for the lawn and it thrives on the plains. Its flowers are white. Grows well in ordinary garden soil, provided the drainage at the roots is effective. Propagated by division.

Streptocarpus.*Gesneriaceae*

Cape Primrose. Very showy plants, stemless, with one or more leaves spreading close to the collar and bearing on scape-like stalks, flowers of dazzling brightness in shades of purple, blue, etc. Suitable for the rockery. They thrive with great difficulty on the plains. But well established plants brought from the cooler stations in the cold season flower well. At medium elevations, they are best raised from seed which is very minute and sown as described on page 62. Propagated also by division or by leaf cuttings. For the hill stations, *S. Dunnii*, *S. Wendlandii* and *S. Kezocensis* are some of the most desirable species.

Streptasolen.*Solanaceae.*

S. Jamesonii (syn. *Broxvallia Jamesonii*), native of Colombia, is a perennial flowering shrub of rare merit. Also known as Fire-bush, 4—6 feet. Leaves resemble those of *Broxvallia speciosa major*. Flowers, a bright orange-red, in large terminal corymbose panicles, in great profusion. This plant, which is successfully cultivated in Ceylon, is well-suited to medium elevations. On the plains, it grows but seldom flowers. At stations 2,000 feet and higher it should prove one of the showiest among hardy plants outdoors. It is also grown as a standard and is then very effective,

because of the pendulous habit of its branches, but the main stem should be supported with a stake. Of easy culture. Propagated by seed or by cuttings. Transplanting should not be attempted when the plant is about to come into bloom as the older leaves are all shed each time the roots are disturbed.

Strobilanthes.

Acanthaceae.

A genus of dwarf shrubs, of easy culture, some of which are valued for their bright foliage of rich metallic tints and others for their flowers. *S. Dyerianus*, of a trailing habit, has pretty reddish purple foliage with iridescent tints of bronze and green. Flowers pale-purple, inconspicuous. Very effective for bedding in shady places. Propagated by cuttings. *S. gossypinus*, flowers violet, and *S. isophyllus*, flowers blue and white, profuse, are suitable for medium elevations. Propagated by cuttings.

Sunflower: *Helianthus*.

Swainsona.

Leguminosae.

Very ornamental, flowering sub-shrubs suitable for medium elevations. On the plains they grow but do not flower freely. *S. galegifolia* has attractive foliage and bears large axillary racemes of rose-red flowers, displayed well above the foliage; var. *albiflora* bears pure white flowers. Easily propagated by seed or by

cuttings. The white flowered variety is more showy.

Swan River Daisy: *Brachycome*.

Sweet Pea: *Lathyrus*.

Swietenia.

Meliaceae.

S. Mahagoni, which yields the well-known Mahogany timber, is a noble-looking tree of immense size and light spread that makes it an excellent shade tree, especially for large gardens. Flowers small, inconspicuous. Propagated easily by seed.

Synadenium.

Euphorbiaceae.

S. Grantii, popularly known as the African Milk Bush, is an excellent hedge plant which can stand a great deal of drought and is not attacked by cattle. It is also easily propagated by cuttings. Makes a dense barrier which when intermixed with bamboo brush of the thorny variety makes a cheap and effective boundary hedge.

Tabernaemontana.

Apocynaceae.

Wax Flower, also known as East Indian rose bay. Very attractive flowering shrubs, 4—6 feet high, with glossy green foliage and bearing showy white, fragrant flowers. *T. coronaria* and its variety *flore-pleno* are universally popular plants for the tropical border. They require a sunny situation, a fairly rich soil, and plenty of water. Propagated by cuttings.

Tacsonia.*Passifloraceae.*

Ornamental flowering climbers closely resembling the Passion Flower creepers to which they are allied. *T. vanvolxemii* bears beautiful scarlet flowers, and is one of the most desirable plants for covering a trellis or arbour at medium and high elevations. Not well-suited to the plains. Propagated by cuttings and by layers.

Tagetes.*Compositae.*

T. erecta, the African Marigold, about 2 feet high, is one of the most easily cultivated and free flowering among the annuals suitable for this part of the country. Flowers large, showy, yellow, some varieties full double. *T. patula*, the French Marigold, is of dwarfer habit and smaller flowers. A variety *nana* is of very dwarf habit and its flowers are yellow blotched with chocolate-crimson. *T. signata* is a species with pinnately divided leaves and its variety *pumila* is of extremely dwarf and bushy growth. It spreads on the ground like a Verbena and bears in great profusion bright yellow flowers. Well-suited for ribbon borders. Easily propagated by seed.

Tamarindus.*Leguminosae.*

T. indica, the well-known Tamarind tree, is admittedly one of the handsomest of tropical shade trees.

but its cultivation is not advisable in small gardens, as its over-dense foliage will allow nothing to grow under its shade and its roots which travel to a great distance smother the roots of less robust plants. Propagated by seed.

Tamarix.

Tamaricaceae.

Tamarisk. Ornamental flowering shrubs or trees equally remarkable for their graceful feather-like foliage somewhat resembling that of *Casuarina* and for their showy flowers. *T. gallica* var. *indica* is a common jungle shrub of N. India and bears in great profusion beautiful little pink flowers. The Tamarisks are very suitable for mass planting in hot and dry regions and grow even in alkaline and saline soils, and are especially well adapted for planting in areas close to the sea-side as they are well able to withstand the spray of salt water. Propagated by seed which is very minute and should be sown as described on page 62.

Tecoma.

Bignoniaceae.

A genus of extremely showy flowering shrubs and climbers which thrive luxuriantly on the plains. *T. capensis* syn. *Tecomaria capensis*, also called the Cape Honeysuckle, is a beautiful scandent shrub, 6—8 feet, native of S. Africa, which bears large terminal racemes

of tubular orange-red flowers, somewhat resembling the honeysuckle in shape. A very floriferous shrub in bloom almost throughout the year. Of easy culture. *T. Smithii* is a shrub somewhat similar to the preceding but produces large compound panicles of yellow flowers tinged with orange. Supposed to be a hybrid introduced from Australia. A rather shy bloomer on the plains but well suited to medium elevations. *T. stans*, Yellow Elder, is one of the commonest garden shrubs, mostly used for screen planting or as a hedge. Habit 10—12 feet, foliage pinnate, graceful; flowers in large clusters of golden yellow. *T. jasminoides* is an elegant climber with dark green pinnate leaves, and bears corymbs of large rose white flowers with a rose-purple centre. *T. grandiflora* is a vigorous climber of extensive habit, and dark glossy green foliage; bears large deep yellow, allamanda-like flowers. Propagated by seed, which is plentifully produced by some of the species, and by cuttings or layers in the case of the others.

Tectona.

Verbenaceae.

T. grandis is the well-known Teak tree, very valuable for purposes of timber and also very attractive as an immense shade tree in large gardens.

Tephrosia.*Leguminosae.*

Attractive flowering shrubs of which *T. grandiflora* is an important species, 2—3 feet, native of S. Africa, with purplish red flowers. Propagated by seed. *T. macrantha* is a taller shrub, 8—10 feet, flowers in loose panicles, purplish white, resembling sweet-peas. A very showy plant.

Terminalia.*Combretaceae.*

T. Catappa, the Indian Almond, is a familiar tree in S. India, tall and stately and of extremely easy culture. Its shade is rather too dense to admit the growth of other plants under its shelter. The branches come from the main axis in whorls, the leaves are large and glossy. Propagated by seed.

Thespesia.*Malvaceae.*

T. populnea, the Portia Tree, is one of the most extensively cultivated trees in the neighbourhood of Madras and largely employed as an avenue tree. It has fairly attractive foliage and bears large yellow hollyhock-like flowers. Thick branches 3—4 inches in diameter and 7—8 feet long planted by the road-side take root and grow. Unfortunately the planting of this tree has been overdone in Madras to the exclusion of numerous other trees of far greater merit and equally

easy to cultivate. The trees raised from large cuttings are of a rather straggly irregular habit. Seedlings (which are easily raised) produce more compact and shapely trees. Suitable for sea-side planting.

Thevetia.

Apocynaceae.

T. nerifolia is an easily cultivated shrub of West Indies and Mexico, 8—12 feet, with attractive foliage resembling that of Oleanders to which it is closely allied; bears large yellow, orange or white flowers in terminal cymes. This shrub has of late been extensively employed in the neighbourhood of Madras for screen planting. Its light green, glossy leaves produce a very pleasing effect, and have the merit of not accumulating much dust from the road-side. The plant can also stand a great deal of drought and is rapid-growing and easily propagated by seed or cuttings.

Thuja.

Pinaceae.

Also spelt *Thuya*. Popularly known as Arbor-Vitæ. Although natives of the temperate climate, plants of *Thuja* can stand tropical conditions remarkably well. Fresh seed imported from Europe, or obtained from any of the lower Himalayan stations such as Dehra Dun, germinates well in two to four months. The plants are of rather slow growth, but are not exacting in their requirements. They can be

planted out and can well resist the tropical sun, but they seldom attain the height to which they grow in their native habitat. Both as pot plants in a young state and as specimens on the lawn they are extremely elegant. Propagated also by cuttings in sand, but the cuttings should be taken from the erect branches, as the lateral ones produce plants with a horizontal habit. *T. orientalis* is the species best suited to the lower elevations. Can be kept indefinitely in pots in a healthy condition by re-potting the plants in fresh compost once a year in the rainy season. A 12-inch pot can support a plant 15 feet high.

Thunbergia.

Acanthaceae.

An extensive genus of handsome shrubs and climbers, of easy culture, and universally popular because of their bright and showy blue, yellow, orange, purple or white flowers. *T. grandiflora* is perhaps the best species among the climbers. Native of Bengal. It is a rapid grower, and of vigorous habit, very useful for a trellis or arbour, and bears large, bright blue flowers, whitish in the throat in short stout racemes. There is a variety of this which is white flowered. Easily propagated by cuttings. Equally attractive is *T. alata*, the Black-eyed Susan, which bears cream-coloured flowers about an inch or more across with a dark purple centre. There are several varieties of this: *Var. alba*

has white flowers with a dark centre. Var. *aurantiaca* bears deep orange-coloured flowers with a deep purple (almost black) centre. This is the best of the group. *T. fragrans* is similar to the last but has pure white (somewhat larger) flowers, but without any eye in the centre. *T. mysorensis* is another attractive indigenous climber, with flowers yellow, 2 inches across (the tube purple), in long pendulous racemes.

Of the shrubs in this genus, *T. erecta* (syn. *Meyenia erecta*), native of W. Africa, is perhaps the most showy and free flowering, 2—4 feet. Bears large purple flowers 1½—2 inches across, funnel form, deep purple with yellow throat. A very desirable shrub for the mixed border. A variety *alba* is white flowered. *T. Kirkii*, 2—4 feet, of tropical Africa, is of compact habit, with small pinnate leaves and bears purplish blue flowers. *T. affinis* is a rambling shrub, also of Africa, 4—5 feet, with violet purple flowers. All the above are easily propagated by cuttings or by seed when available.

Thyrsacanthus.

Acanthaceae.

T. rutilans is a fairly attractive flowering shrub suitable for the mixed border and somewhat similar in character to *Justicia*, 5—6 feet high, native of Colombia; bears tubular red flowers about 1½ inch long in pendulous racemes. Propagated by cuttings.

Tibouchina: *Pleroma*.*Melastomaceae*.

T. semidecandra is one of the handsomest of flowering shrubs, 8 feet high, which thrives at medium and high elevations. On the plains it requires too much care for successfully cultivating it and does not flower freely. Foliage velvety or light green, and flowers a deep reddish purple or violet, 4—5 inches across. Propagated by cuttings, with bottom heat, or by *gootec*.

Tigridia.*Iridaceae*.

Showy bulbous plants, 1—2½ feet tall, suited to medium and high elevations of which *T. pavonia*, also known as Tiger-Flower or Shell-Flower is perhaps the best. Flowers 5—6 inches across with bright scarlet petals with a cup-shaped centre curiously marked. Hence the name Tiger-Flower. The corms should be rested after seasonal growth is completed and re-started in March and April. Propagated by offsets.

Tillandsia.*Bromeliaceae*.

A genus of S. American epiphytal plants, closely resembling Billbergias and requiring the same treatment. They can be grown with equal success either on a block of wood, like orchids, with a little moss on the roots to keep them moist by syringing or in pots like terrestrial orchids. The leaves are mostly of variegated

form and the flowers showy. *T. musaica*, *T. Lindenii*, *T. zebrina* are three of the important species. *T. usneoides* is the Spanish Moss or Long Moss, which resembles a lichen and grows as an epiphyte in the wild state hanging down from the branches of forest trees in tropical America. A plant of striking appearance in a conservatory. Propagated by division.

Tithonia.

Compositae.

T. diversifolia, popularly known as the Mexican Sun-flower, is a showy flowering shrub of easy culture, 6—8 feet, bearing through the greater part of the year, large, bright orange-yellow flowers in great profusion. A plant of fairly rapid growth and large spread and well suited for long borders in the more outlying parts of large gardens, also for planting in large beds by itself. *T. speciosa* is another species with scarlet flowers. Easily raised from seed.

Tococa.

Meclastomaccae.

T. platyphylla (syn. *Sphaerogyne latifolia*), native of Peru, is a magnificent foliage plant (but somewhat difficult to grow) with large, oval, satiny leaves, 15—20 feet high. Suited to medium elevations. Propagated by cuttings with bottom heat or by *gootee*.

Torch Lily: *Kniphofia*.

Torenia.

Scrophulariaceae.

There are few flowering plants more showy and at the same time more easily cultivated than Torenias. They are among the very few plants with rich violet blue flowers which thrive on the plains with little care; because of their dazzling purple shades of colour, they are popularly known as Pansies of the plains. The annual species *T. Fournieri*, 10—12 inches high, is easily raised from seed, and by successive sowings can be had in bloom almost throughout the year. The seed is plentifully produced and local seed is very satisfactory. Flowers, bright purplish-blue with a yellow throat. Excellent bedding in the summer. The early buds should be persistently nipped until the plant spreads out into a bush, and the flowers should be removed as soon as they fade. In the absence of these precautions the results are sure to prove disappointing. *T. Baillonii* is of a trailing habit, somewhat more delicate than the preceding on the plains, but useful as a cold season annual. Flowers, a bright golden yellow with a purple eye. Extremely handsome, but not very free flowering. *T. asiatica* is a perennial, of trailing habit, native of the Nilgris; an ideal plant for hanging baskets as well as for carpet

bedding. Flowers, purple-blue with a yellow eye, displayed well above the mass of foliage which completely covers the soil. Propagated by cuttings.

Trachelospermum: *Rhynchospermum*. *Apocynaceae*.

T. jasminoides is an elegant looking climber of extensive habit; known as the Star Jasmine, because it bears in great profusion small star-shaped white flowers which are very fragrant. Thrives with little care at medium elevations, but is not luxuriant on the plains. Propagated by cuttings in the rains or by layers.

Tradescantia.

Commelinaceae.

Spiderwort. Foliage plants, mostly of decumbent habit, useful for the rockery and carpet bedding. *T. zebrina* syn. *Zebrina pendula*, commonly known as the Wandering Jew, is well suited for hanging baskets. The leaves are of a bright purple colour with streaks of an iridescent grey on the upper surface. Flowers small, rose-red, inconspicuous. *T. fuscata*, leaves, 6—8 inch long, flowers blue or blue-purple, 1 inch or more across. *T. fluminensis*, leaves striped yellow and white in the variegated form, and flowers white. This too is known as the Wandering Jew and similar in habit to *T. Zebrina*. *T. Reginae* is perhaps the best of the species with upright habit. Leaves about 6 inches long, with stripes or streaks of purplish-crimson and silvery grey,

the under side purple. Native of Peru. A conservatory plant. Propagated easily by cuttings of young shoots.

Traveller's Tree: *Ravenala*.

Trevesia.

Araliaceae.

T. palmata is a tall shrub or small tree up to 20 feet. With large palmate leaves, 1—1½ feet, crowded at the ends of branches on long petioles 1—1½ feet. Flowers 1 inch across, creamy white, showy. An ornamental shrub of very distinctive habit, suitable for shaded situations at medium elevations. Propagated by seed.

Tristellateia.

Malpighiaceae.

T. australis is an ornamental climber, native of Madagascar, of easy culture, bearing in great profusion almost throughout the year, bright yellow flowers in terminal and axillary racemes. Propagated by seeds and by layering.

Tritoma: *Kniphofia*.

Tritonia.

Iridaceae.

Blazing Star. Iris like plants, with sword-shaped leaves and closely allied to Montbretias and requiring the same treatment. Suited to medium and high elevations and flowering only occasionally on the plains. *T. crocosmæflora*, 3—4 feet high, with flowers 2 inches across in racemes, orange-red, is perhaps the best of the several species.

Tropaeolum.*Tropaeolaceae.*

T. majus is the common Nasturtium of the climbing variety. Annuals of great beauty—the flowers of which present a large variety of dazzling colour. At medium elevations they grow with little care but on the plains, care should be taken not to disturb the roots. The somewhat large seeds should therefore be sown where the plants are to remain. *T. minus* is a dwarf species, similar in other respects to the preceding. *T. peregrinum* is the Canary Creeper, also an annual, of tall climbing habit, and rapid growth, with canary yellow flowers. Suited to medium and high elevations. Propagated by seed. The perennial species, such as *T. tricolor* and *T. azurcum*, which are very beautiful, can be raised only at hill stations.

Tuberose: *Polyanthes*.**Turnera.***Turneraceae.*

T. elegans is a pretty flowering shrub, native of Brazil, about 2 feet high, which bears abundant creamy white flowers with dark centre. *T. ulmifolia* is another common species, with larger flowers which are yellow. Propagated by cuttings or by seed.

Uroskinnera.*Scrophulariaceae.*

U. spectabilis, like the majority of the members of this family, is a showy flowering shrub of Central

America, 4-6 feet, bearing bright purplish flowers in dense racemes. Thrives easily at medium elevations and as a conservatory plant on the plains. Propagated by cuttings.

Vallaris.

Apocynaceae.

V. Heynei is an excellent, tall, climbing, indigenous shrub, bearing sweet-scented, pure white, cup-shaped flowers, 2½ inch across, in cymes of 3-10 flowers each. Easily cultivated and in bloom almost throughout the year. Propagated by cuttings or by layers.

Vallota.

Amaryllidaceae.

Bulbous plants of S. Africa, closely allied to *Cyrtanthus* of which they are by some considered a sub-genus. *V. purpurca*, the Scarborough Lily is an extremely showy plant in bloom, with long strap shaped leaves 1½-2 feet, bearing scarlet, funnel-shaped flowers, 2½ inch across, in umbels on tall scapes, 2-2½ feet high. Requires the same treatment as *Amaryllis* and suited to medium elevations. On the plains, bulbs which have been grown to maturity and rested in a more favourable climate present no difficulty in flowering. A var. *grandiflora* bears blood-red flowers, and another *alba* is white flowered. There are also numerous other varieties which may be imported from dealers who specialise in bulb-growing.

Vanda.*Orchidaceae.*

An easily cultivated genus of Orchids, with large handsome flowers. Some of the species are free flowering on the plains and the flowers are sweet-scented. *V. Roalburghii* is easily established on the trunks of large shade trees where it needs almost no attention except occasional syringing in the dry months and produces in great abundance racemes of 6—8 flowers each, which are buff-coloured with the middle lobe light-purplish. *V. teres* is also a species suitable for the plains, with very large showy flowers of which the variety *alba* is free flowering. *V. coerulea* and numerous other species can be cultivated with success at medium elevations or at stations which have a large rainfall.

Verbena.*Verbenaceae.*

One of the most attractive of flowering sub-shrubs of trailing habit which are best treated as annuals in this climate. The hybrids produced by breeding in recent years present an extensive range of varieties the flowers of which are of dazzling beauty. Some are of compact bushy growth, and others of spreading habit, some are what are called “selfs” (having one colour), others “Oculatas” or having an ‘eye’ of a different colour, and others again are called ‘Italians’ or striped

varieties. Verbenas are extremely useful as a ground cover in beds of lilies and other tall plants and in the margins of the shrubberies. They are also excellent plants for hanging baskets. Easily raised from seed. Sown about the middle of September, they come into bloom in December. The trailing varieties should have their branches pegged down to the soil by means of little twigs $1\frac{1}{2}$ —2 inches long, (made of the mid ribs of leaflets of the cocoanut tree) when they root and spread with greater vigour. When any of the seedlings happen to be of common merit, they can be preserved through successive seasons by means of cuttings or layers. But these should be carefully protected from the rains or they are sure to come to grief. Among the chief varieties are *grandiflora*, *compacta*, *coccinea*, *auriculacflora*, etc. The colours range from white through lilac and rose to violet and purple; with shades of pink. *V. venosa* is a somewhat less showy species, with rigid leaves. There has latterly been marketed also a new strain of sweet-scented verbenas. Verbenas, lemon-scented is *Lippia*.

Victoria.

Nymphaeaceae.

V. regia, the Royal Water Lily, is one of the most magnificent of aquatic plants which can be grown successfully in all parts of the country. Given plenty of room and a sufficient spread of water, it attains a

gigantic size, with leaves, 4—6 feet in diameter, with the margin turned up at right angles to the water surface to about 4 inches, making them basin-like. The flowers which open in the evening and remain open till late the next morning for two days, are at first white and then change into pink or red and have a delicious fragrance. They are about, 12—15 inches across. These plants usually require about 4—6 feet of water and may be appropriately raised in any of the large cisterns built for fountains. They produce seed in abundance which soon becomes self-sown. The seeds can be kept fresh for months in water and when they germinate they should be started at first in a seed pan placed in about 12 inches of water. As they grow, they must be given greater depth of water.

Vinca.

Apocynaceae.

V. minor. Periwinkle. This blue flowered trailing plant, which is very effective for hanging baskets and window boxes as well as on rockeries, can be successfully grown only at medium and high elevations. One of the most suitable plants for ground cover in shady places. There are numerous horticultural varieties of this species, such as, *Alba*, with white flowers, variety *alba plena*, with double white flowers, var. *atropurpurea*, with dark purple flowers, *rosea* and *rosea fl. pl.* rose coloured, single and double. Also *variegata*,

with variegated leaves. Propagated by cuttings. *V. major*, blue flowered, is very similar to the *minor* except that it is larger throughout.

Vinca rosea, the *Madagascar periwinkle*, with its several varieties, forms one of the commonest flowering shrubs which thrives luxuriantly even under very adverse conditions and an extra tropical climate. It is literally ever blooming and in Madras it is known as the Grave-yard flower. The flowers are rose-red, rose-purple, or white, with or without a reddish eye. The several varieties are known as *rosea*, *rosea alba*, and *oculata*. Propagated by seed or cuttings.

Viola.

Violaceae.

Viola tricoloris *Pansy*.

Viola odorata, the sweet violet, although a native of the temperate climate, can be grown as a seasonal plant on the plains with some measure of success, and must be welcome if only for the elegance of its foliage. The numerous, single and double, named varieties, such as *Napopolitan*, *La France*, *Prince of Wales*, and *Baron Rothschild* are suitable only for the hill stations. On the plains, plants of the common, single, bluish white variety brought from the hills in September or October and potted up in a fairly rich but open soil to which a little bone meal has been added and placed in a fairly

sunny situation, sheltered only during mid-day, flower during January and February. Plants which have made good vegetative growth during the cold season are easily saved during the hot weather in a conservatory; and potted up in fresh, rich soil in October they seldom fail to flower in successive years. But the quality of the flowers bears little comparison with the results obtained on the hills. Propagated by division. Violets on the plains are best cultivated in pans about 5 inches deep and planted 8 inches apart or in 6 inch pots. One part of well-rotted stable manure to four parts of sandy loam, to which are added a handful of bone meal and a lb. of quick lime for the quantity of soil needed for about 30 plants makes an excellent compost.

Vittadinia: *Australian Daisy.* *Compositae.*

V. triloba (syn. *V. australis*) is an attractive flowering sub-shrub of trailing habit and bearing nearly always in great abundance, bright, white, single, daisy-like flowers. Very useful for hanging baskets, or as ground cover in sunny situations. Propagated by seed, (which is very minute) or cuttings or division of the roots.

Vriesia. *Bromeliaceae.*

Tropical American foliage plants which are also showy in bloom, very closely resembling *Tillandsias*

and requiring the same treatment. The term *Vriesia* (or *Vriesea*) is often used as a synonym for *Tillandsia*. *V. hieroglyphica*, native of Brazil, is one of the showiest of foliage plants, very much like *Billbergia thyrsoides* in shape and habit, but of very striking appearance, because of the prominent markings and bands of dark green, and purplish beneath. Flowers yellowish. An excellent conservatory plant, well suited for medium elevations.

Wandering Jew: *Tradescantia fluminensis* and *Zebrina pendula*.

Watsonia.

Iridaceae.

Bulbous plants of S. Africa, very closely allied to *Gladiolus* and requiring the same treatment. The flowers too are almost identical with those of *Gladiolus* except that the former are more symmetrical in shape, while the latter are somewhat orchid like. Suited to medium and high elevations. *W. augusta*, a scarlet flowered species is one of the most showy in this genus.

Wattle: *Acacia*.

Wax-flower: *Hoya carnosa*.

Wigandia.

Hydrophyllaceae.

Tall shrubs of striking appearance, with large leaves about 18 x 10 inches and flowers in showy terminal

cymes. *W. Figieri* probably a horticultural variety of *W. caracasana*, 12 feet high, bears lilac-blue flowers. Suited to medium elevations. Propagated by seed, which is very minute and should not be watered over head before the seedlings are fairly well advanced.

Wisteria.

Leguminosae.

Spelt also *Wistaria*. An extensive climber of vigorous and extensive habit, handsome foliage and long drooping racemes of blue, purple, lilac or white, pea-shaped flowers of extraordinary beauty. Suited to hill stations. At medium elevations it grows well but does not flower freely. On the plains, the vine makes luxuriant vegetative growth, but seldom flowers at our latitude. *W. chinensis*, is one of the most showy species, with large blue-violet flowers. The vines should be moderately pruned on the same principle as the grape vines are pruned for abundance of flowers. Propagated by seed or layers.

Xanthosoma: Syn. *Phyllotanium*.

Araceae.

X. Lindenii. (syn. *P. Lindenii*) is a magnificent foliage plant, resembling *Colocasias* and requiring the same treatment.

Xeranthemum.

Compositae.

Everlastings. Annuals, similar to *Helichrysum*, about 2 feet, with numerous varieties, bearing flowers.

1—1½ inches across, purple, rose, etc. Used for dry bouquets. Suitable for medium elevations. Propagated by seed.

Yucca.

Liliaceae.

Plants with stiff, sword-shaped leaves with needle pointed tips, effective for ornamental boundary hedges, or lawn planting or massing in large gardens along with plants of similar habit such as Cacti and Aloes. *Y. gloriosa* and *Y. aloifolia* are the two species commonly cultivated in this climate. The popular name for these is Spanish bayonet or Adam's needle, because of the thorn-like tips of the leaves. The white lily-like flowers which are borne on a tall stalk are very handsome, but they are produced at intervals of several years. Propagated usually by offsets, but stem cuttings or seeds may also be used.

Zamia.

Cycadaceae.

Magnificent foliage plants very closely resembling Cycads and requiring the same treatment. They are very effective as tub-plants and are at their best in partial shade. *Z. Lindenii*, *Z. integrifolia* and *Z. furfuracea*, which are natives of Ecuador, W. Indies and Mexico respectively, do well in our climate. Propagated by means of seeds and offsets.

Zantedeschia: syn. *Richardia*.

Zebrina.

Commelinaceae.

Sub-shrubs of trailing habit, popularly known as the Wandering Jew. The name is often used synonymously for *Tradescantia* to which this genus is closely allied. *Z. pendula* is very suitable for hanging baskets and for ground cover. Propagated easily by cuttings.

Zephyranthes: syn. *Altamasco*. *Amaryllidaceae.*

Zephyr-Flower. Fairy Lily. Very elegant, dwarf bulbous plants with narrow grass-like leaves and useful for edgings; extremely showy in bloom. *Z. altamasco* is large flowered than the other species. Flowers white. *Z. carinata* is the largest and choicest among the rose flowered species. *Z. rosca* has smaller flowers. *Z. tubispatha* is another white flowered species. *Z. Andersonii* and *Z. aurea* are bright yellow flowered.

Zinnia.

Compositae.

Few garden annuals are more popular or more satisfactory for the plains than the well-known Zinnias, and they have been enormously improved in recent years by selection and breeding, and there are now offered countless varieties, tall, medium and dwarf, in a wide range of colour, in deep and light shades of crimson, orange and yellow, derived from *Z. elegans*, *Z. grandis*.

flora, *Z. Haageana*, etc., Zinnias are among the most easily cultivated plants and by successive sowings can be had in bloom through the greater part of the year. To ensure good results, two things are important: (1) The seed should be imported every season from European seedsmen of repute. The local seed is plentiful and is even self-sown, but is worthless. (2) Even the best imported seed is apt to produce poor results if the seedlings which have a tendency to run too readily into flower are not persistently checked by pinching out the tops until strong bushy growth is secured. The tall varieties produce striking effects when massed in the borders at some distance, as their colours are very loud and less agreeable near.

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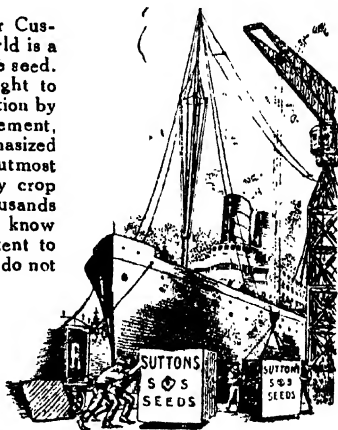
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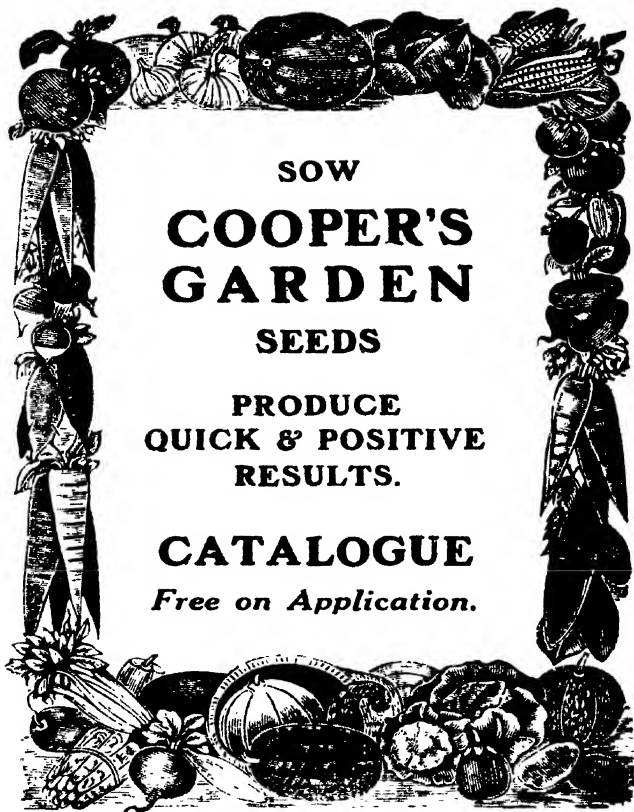
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